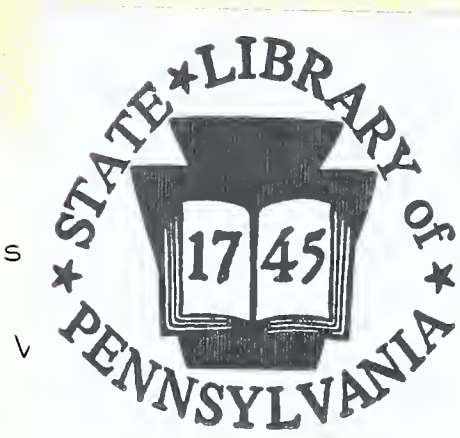
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The Inventive age

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INVENTIVE AGE

A Journal of Manufacturing Industry and Scientific Progress.

VOL. XXIV. No. 1. } WASHINGTON, D. C.—JANUARY 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

BERGEN--CHRISTIANIA RAILWAY.

By C. VAN LANGENDONCK.

ONE of the most important railway enterprises which have been completed in Europe within recent years, is the line that has been recently opened across the Scandinavian peninsula for the purpose of providing direct communication between Bergen, on the Atlantic seaboard, and Christiania, the capital of Norway. This line possesses considerable interest and deserves special place in the annals of railway construction, inasmuch as great natural difficulties had to be and were successfully overcome.

These difficulties necessitated very extensive preparatory labors, extending over a number of years, during which a variety of alternative schemes were discussed, a fact which plainly illustrates the unusual drawbacks with which the Norwegian engineers had to contend. The idea of a Bergen-Christiania railway was under discussion as early as the year 1870, and five years later the Norwegian Parliament voted a grant for the construction of a railway from Bergen to Voss-Vangen, which railway now forms the most westerly section of the line. The extension of the railway eastward through the mountain was a difficult matter, as the range is so broken up. The engineers made several preliminary surveys and elaborated several routes, but in any case extensive tunnelling was seen to be requisite. The preparations occupied over eleven years, and it was not until 1894 that the extension was sanctioned. Even then the authorities only decided to proceed as far as Taugevand, situated at a height of 4,300 feet above sea level, and about 116 miles from Bergen, leaving the further extension open for the time being.

The district between Vosse-Vangen and Taugevand is the most mountainous in Norway, with short, narrow valleys, from which the mountains rise abruptly, if not perpendicularly, to great heights. The snow was a sore question, and to gather reliable data concerning its fall, drift, and so forth, several meteorological stations were set up and daily observations made. These revealed a rather remarkable state of affairs, it being found that snow fell every month during the year, and that the average fall during the winter was 11 feet. Its movement was also extraordinary, owing to the severity of the winds, which caught the soft dry snow and piled it into drifts. The construction of tunnels could not be avoided, and the most feasible route was one involving the boring of twelve tunnels, with an aggregate length of over 11 miles. The most formidable was the Gravehals tunnel, 17,420 feet in length. This tunnel is the longest in Northern Europe, and perhaps one of the most difficult ever constructed, necessitating several years of continuous work. Nearly one and a quarter miles east of the Gravehals Tunnel is another long tunnel, the Reinunga Tunnel, which begins in the Styvedal and ends in the Bodladal. The railway line is located high on the mountain side, running along the Reinunga and the Seltuft Lake, some 492 feet above the road. The country is very wild there, and more especially in Bodladal, falls of rock and snow avalanches are of frequent occurrence. The conditions for labor were therefore also very unfavorable. The climate was very trying at these two tunnels: at the Gravehals tunnel, for instance, the work was once stopped for a month and a half through an avalanche carrying away a portion of the machine-house, and on another occasion for about two months, owing to there being no water obtainable.



FIG. 1.—SHOWING ENTRANCE TO GRAVEHALS TUNNEL.



FIG. 2.—SHOWING SNOW GUARDS AS A DEFENSE AGAINST DRIFTS.

While work on this section was in progress, the Government decided that the line should extend eastward from Taugevand via Gulsvik and Roa, where it was to be linked with the existing eastern railway line. After leaving Taugevand, the descent immediately commences, and the grade is much easier than that on the western mountain slopes, the total drop between Taugevand and Haugastol, 23 miles farther on, being ap-

proximately 950 feet. The country is then gently undulating for a short distance, when there comes another sudden descent to Aal, 169 miles from Bergen, at an altitude of about 1,414 feet. On the eastern slopes of the mountains, owing to the valleys being wider, the alinement of the line was appreciably facilitated. The descent still continues until at Bromma, the grade gently undulates onwards to Gulsvik, after which is another slight ascent to overcome the foothill range, which is pierced at Haversting, at an altitude of 460 feet, by a tunnel 7,644 feet in length. Issuing from this tunnel, the descent is effected with easy grades, one sharp climb and descent, until a junction with the eastern railway system leading into Christiania is effected. The total length of the railway line from Bergen to the capital is approximately 306 miles.

being 566 feet in length with eight 70 foot spans. Owing to the exposed nature of the line in the upper sections above the timber line, extensive fencing as a defense against drifting snow was necessary beside the track, these screens being almost continuous for fifty miles.

The line passes through a wilder stretch of country than any other European railway. The winter lasts nine months, and sometimes longer, the snowfall is heavy, and the rainstorms terrific, with a tremendous downpour.

The cost of the line was about $16,000,000, and the difficulties of construction are only equaled by those experienced in keeping it open for traffic. Three American rotary plows are used in winter, and one is always kept ready for service, as it has to be requisitioned on one or more occasions every month during the year, and a



FIG. 3.—ENTRANCE TO A TUNNEL.

Altogether, there are no less than 184 tunnels on the line, representing a total length of about 24 miles. The construction work entailed the excavation of nearly thirty-six million cubic feet of earth and twenty-eight million cubic feet of rock on the high mountain section, while the consumption of dynamite for the tunnel work exceeded 700 tons. There are fifty-five stations between the two terminal points.

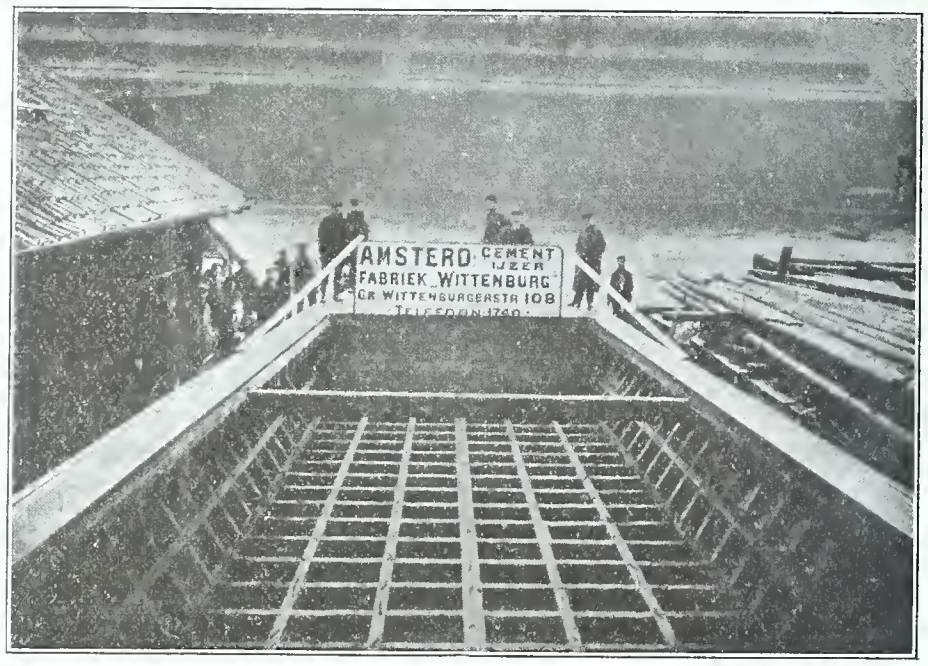
In addition to the numerous tunnels, there are fourteen bridges, the largest three of which are masonry, one having a span of 150 feet, and another heavy snowblock in midsummer is by no means a rare occurrence. The line, however, has reduced the time of traffic between Bergen and Christiania from 54 to 14 hours, and is an important highway for traffic. Numerous extensions are already projected, with a view to bringing the eastern and the western industrial centers into closer communication. The line was opened recently by the King of Norway.

THE INVENTIVE AGE contains sound advice to inventors and patentees. For lack of such advice many have lost money. Subscription price, one dollar a year.

FERRO-CONCRETE BOATS.

THE remarkable durability of ferro-concrete boat construction has been thoroughly demonstrated by a number of cement boats built at Amsterdam, Holland, during the past few years.

In 1887 the small ferro-concrete boat "De Leemeemo" was built on the Monier system, and a larger ferro-concrete boat, of ten tons capacity, was constructed in 1910. The latter reinforced boat, called the "Princess Juliana," was built at the plant of the Amsterdamsche Fabriek van Cement Works. Such was the success attending the use of this vessel, that more recently a much larger craft, having a capacity of 50 tons, was constructed with reinforcement on the inside walls as well as on the outside cement walls and the bottom of the boat.



50 TON FERRO CONCRETE BOAT.

This 50-ton ferro-concrete boat is seen in the illustration, the concrete rods and general construction being shown in detail. The reinforcing rods were tied together in a manner similar to that employed in other concrete constructions, and the concrete mixture placed in position in the usual manner with wooden forms.

As soon as the concrete had hardened, the cement surface was given a coat of waterproofing compound, when the boat was ready for service. It is held that the reliability, low cost of maintenance and fireproof construction of ferro-concrete for boat building make this an ideal system of construction. It is maintained that ferro-concrete boats will undoubtedly come into extensive use in the near future in this country and abroad for the larger as well as the smaller craft.

This is but another of the many unique applications of concrete in the twentieth century. Dry docks and floatable caissons are being constructed in this way. Girders for houses, composed of concrete reinforced with steel, are built on the ground and hoisted into position, and are found to be advantageous. The battleship Connecticut ran on rocks in the Philippines, and tore a big hole in her bottom. It was temporarily repaired with reinforced concrete, and the ship was sent across the ocean. She made the trip in perfect safety, and when she reached the continent and was dry docked for pemanent repairs, it was found that the concrete was so hard and had set so firmly, that they could not dig it out. Dynamite had finally to be resorted to, to remove it. Railroad ties of concrete have been widely experimented with. An example of concrete telegraph poles may be seen across the Hackensack meadows, on the north side of the Pennsylvania railroad tracks. For decorative purposes, indoors and out, it is most adaptable. Beautiful effects of artificial stone moldings, apparent carvings, are daily achieved, and in staircases, loggias and the like it is used with pleasing architectural results. Statuary is being made of it in the very home of Carrara marble. The Italians mix the concrete with vinegar, which delays hardening until the sculptor can model the statute. The life of outdoor electric light bulbs is considerably lengthened by the employment of Portland cement in their bases, instead of plaster. Farmers are employing the same material as roach and rat exterminators, mixing it in the bran and meal. It is only within the last year or so that oil mixed concrete has been experimented with and advocated; yet as far back as the first century after Christ, a Roman architect added hogs' fat or curds of milk to mortar made of lime and sand, and obtained stuccoes that have lasted until the present day. There seems to be no limit to the uses to which concrete can be put. The unusual use of today is the usual one for tomorow. It is in fact useful for any purposes in which the construction comes in contact with the ground or with water.

To keep themselves posted in the progress of the arts in which they are interested, inventors and manufacturers should subscribe for the INVENTIVE AGE, which publishes a list of all patents issued each month. The low subscription price and the character of the publication entitle it to the support of all the inventors of the country.

The Watch industry.

No line of invention has called forth more ingenuity than the making of watches and clocks. It is estimated that more than 50,000,000 are used in the United States, and that the American people have enough money tied up in time pieces to build a good sized city. Civilization would be a medley without time pieces. Some inquiring mind has asked what would happen if every clock and watch in the world would stop. Millions of miles of railroad traffic would be more completely paralyzed than by any human strike than ever occurred. The shipping of the entire world would be face to face with dangers more than extra hazardous. Every movement of man would be hedged with uncertainty.

The average man does not realize the test to which the railroads put the watches of their trainmen. Many roads require a watch to vary less than thirty seconds a week. Yet to vary that much it can vary only one vibration in every 20,160. There are many watches that vary as little as fifteen seconds a month.

Foreigners think that the most wonderful thing in America is the dollar watch. Even the Swiss, long the acknowledged leaders in the manufacture of cheap watches, admit that they are beaten. The dollar watch is the result of the introduction of machinery. One machine does the work that a dozen men did. Each watch has in it 126 pieces. As 10,000 complete watches are turned out every day, it will be seen that it means the making and assembling of 1,125,000 pieces. Each watch is regulated for fourteen days, so that there are always 140,000 watches ticking away the time in one factory alone. The dollar watch is found today in every civilized country on the globe, and in many semi-barbarous countries. Not many years ago, the bulk of our time pieces were imported. Now we send watch movements to Switzerland, to be put in cases there and returned to this country as Swiss watches.

The four hundred day French clocks are regarded as great novelties in the United States. They are geared so high that one turn of the main spring wheel will produce thousands of turns of the ratchet wheel, and the latter turns once in every 150 seconds. The pendulum is suspended on a minute strip of brass, and requires 50 seconds to make a complete vibration. The clock is about the simplest time keeper on the market. The works are enclosed under a glass globe, leaving the whole mechanism in full view.

But the most remarkable clock in the world is the device run by radium, already referred to in these columns. It will run for thirty thousand years without resetting, which is about as near to perpetual motion as an apparatus can hope to come. A half grain of radium is introduced into a tube, and two small leaves of aluminum are also added. These leaves become charged with a current that drives them against the glass. When they touch the glass, this current passes out of them and they return to the former position, only to repeat the performance incessantly. By the introduction of a coherer, similar to those used in wireless telegraphy, a small electric bell can be made to ring off the hours. This little clock has been adapted to meet commercial purposes, and a few have been imported into this country, and can be bought for about $50.

PRIZES FOR INVENTORS.

Monetary prizes, as an incentive to inventors to develop apparatus to alleviate the horrors of war, are announced by the American National Red Cross.

Some years ago the Empress of Russia established a prize fund of 100,000 rubles ($50,000) to stir the interest of inventors, that apparatus to care for the wounded might develop as rapidly as did the engines of destruction. The first prizes were given in London in 1907, but next May the Ninth International Red Cross Conference will be held in Washington, when prizes ranging from $3,000 to $500 will be awarded.

The subjects for competition are as follows:—

1. Organization of the methods of evacuation on the battlefield, comprising as complete an economy as possible in litter bearers.
2. Portable (surgeons') washstands for war.
3. Methods of packing dressings at the aid stations and in the ambulances.
4. Wheeled stretchers.
5. Carriage of stretcher on mule-back.
6. Folding stretcher easily portable.
7. Transport of the wounded between war vessels, hospital ships, and the coast.
8. The best method of heating railroad cars by a system independent of steam from the locomotive.
9. The best model of a portable Roentgen apparatus, permitting utilization of X-rays on the battlefield and at the first aid stations.

The inventions entered in this competition are to be displayed at an exhibition to be held on the occasion of the Ninth International Red Cross Conference at Washington, D. C., May 7–17, 1912.

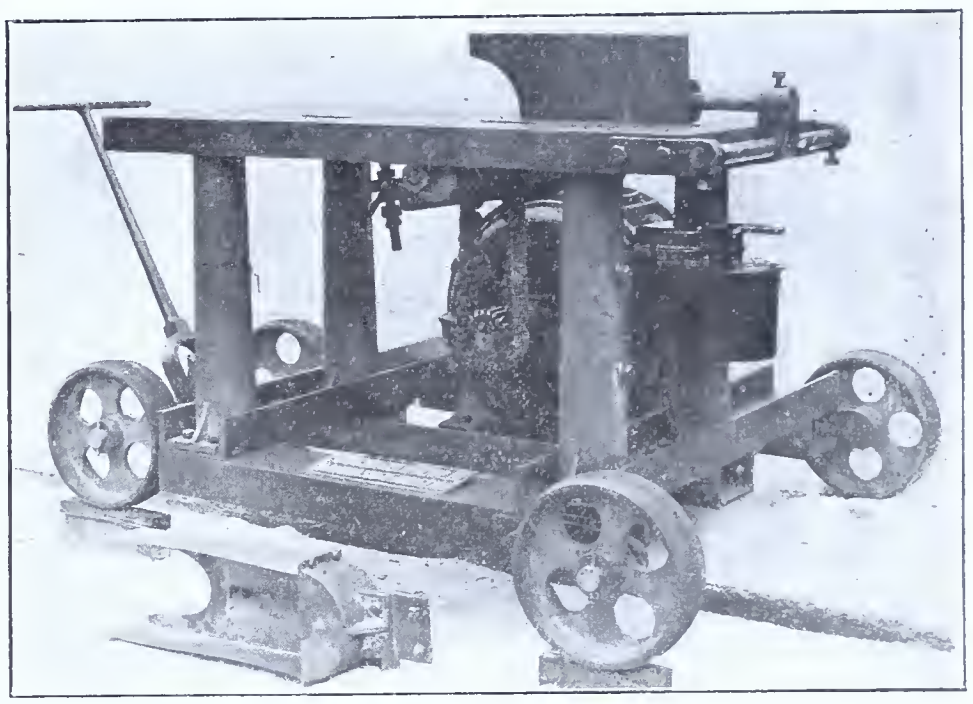
Articles entered in this competition must be received, carriage prepaid, on or before April 15, 1912.

All persons intending to compete for these prizes must forward to the Chairman of the Exhibition Committee, on or before March 1912, a statement of such intention, giving the number of cubic feet which will be required for the exhibition of their inventions.

Further information may be obtained by addressing the Chairman of the Exhibition Committee, Room 341, State, War and Navy Building, Washington, D. C.

ELECTRIC PORTABLE SAW BENCH.

THE accompanying illustration shows a novel electrically-driven portable saw bench, designed and constructed at New Castle on the Tyne, England. It is well known that the cost of frequent handling of timber in large areas is enormous, when it is considered that it has to be stacked and afterwards taken to a saw mill to be cut to desired lengths before despatching. This portable saw bench is fitted with an electric motor which has been designed to effect a saving in this direction, inasmuch as the machine can be moved from place to place and the timber cut where it is stacked. All that is required is a cable to transmit the current.



It is held that in the designing of this saw bench for the particular work in view, a complete departure from the usual accepted type has been rendered necessary. Greater strength was required, so that the tool might withstand the rough usage to which it would certainly be subject, and the weight on the other hand had to be kept down to a minimum, so as to permit of easy mobility.

Power is transmitted from the motor to the saw by a silent chain, and this method of driving, it is maintained, has answered exceedingly well. The saw spindle runs in self-oiling bearings of the ring type, and is carried in an adjustable bracket which permits of tightening the chain when necessary.

The bearings are made in such a way that dust is entirely excluded, and the chain is protected by a guard with the same object. The machine is carried on four wheels, which are made wide so as to minimize the chance of the tool sinking on soft ground, while the front wheels are arranged to swivel.

This is another illustration of the growing variety of uses to which electricity is put. A farmer in New York dammed a creek which flowed through his land, and put in a turbine water wheel and a dynamo. His house is lighted and heated with the power thus engendered. It does his cooking, washing and ironing, his sweeping and dusting: it beats eggs at any one of three speeds, churns and freezes ice cream for him. It pumps water into every room of the house and into every stall of the barn, supplying each horse and cow. It milks twenty cows, two at a time, it drives his ensilage cutter, and the lathes and saws in his shop. How many brooks in the country are waiting for somebody to harness them?

Edison has said that electricity is to do all the drudgery of housework. Soon we will have apartment houses with power washing and ironing machines. Vacuum cleaners are already installed. Many owners of apartment buildings now furnish ice to their tenants without cost—not because they fear the tenants will be unable to buy ice for themselves, but merely as an additional inducement to become tenants. Suppose an owner were to install in each apartment a vacuum cleaner connected with the main plant in the basement, a washing machine and an ironing machine run by electricity. It is a safe assumption that his apartments would not be vacant, but that there would be a waiting list booked at the renting office. What janitor will first offer to wash all dishes in his building for $2 a week a family? In a few months the owner would buy a dish washing machine and the janitor would be given a job of running it. Cooking will be done by electricity, predicts Edison, under rules that will make bad cooking inexcusable. Every stove will have a heat indicator, every cook book will tell how many degrees are required for each article of food.

Handling Ice by Electricity.

In an artificial ice making plant, large heavy blocks of ice have to be lifted from the freezing tanks or cans and removed to other parts of the plant. These are handled by cranes, electrically operated, and capable of carrying blocks of ice 20 by 12 by 8 feet. The supporting rods are frozen solidly into the ice while in the cans and the blocks are lifted by this means, with a minimum of labor.

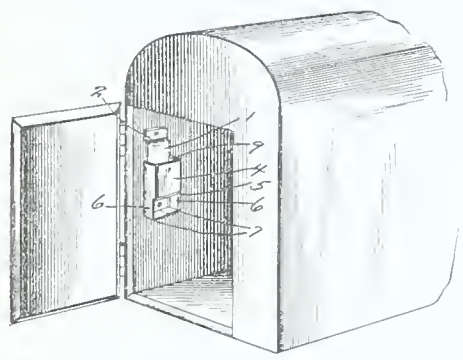
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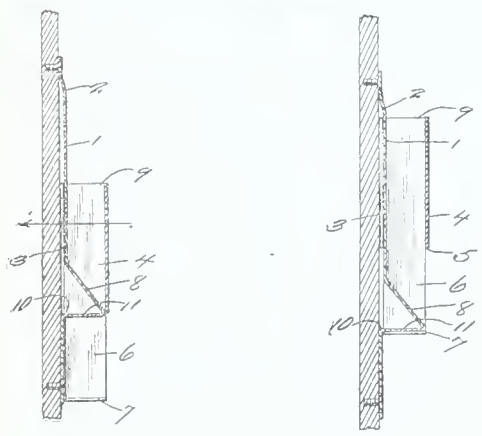
CLEVER NEW PATENTS.

Mail Box Coin Holder.—Explosive Toy.—Prevents Mice From Entering Pianos. Pneumatic Tire.

Mail Box Coin Holder.

One of the problems in the rural delivery of mail, where the box is often located half a mile or more from the house, is to devise some means whereby stamps may be purchased, or letters registered, without incurring the inconvenience of sending some one to wait for the postman and transact the business in person. A device that is intended to be attached to mail boxes, to automatically meet this difficulty, is shown herewith. It is the invention of Henry C. Allen, of Ruby, S. C., and is to be attached to the inside of a mail box. The money is deposited in the opening 9 at the top of the receptacle. (see cuts) A plate is bent outwardly so as to form a space for the inner portion 3 of the

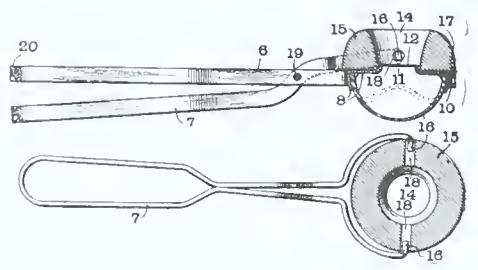




receptacle, which is designed to move vertically. The receptacle is provided with side extensions, bent inwardly as at 7. The plate 1 is provided with an outwardly and downwardly inclined portion 8, and when the vertically movable receptacle 4 is pressed upward by means of the transverse portion 7, the coins which rest on the inclined portion will at once slide out through the opening 5 and into the hands of the carrier, as will be readily seen. When the device is in closed position, the back portion of the receptacle 4 engages the shoulder 10. When the receptacle 4 is moved upward, in order to release the coins, the transverse portion 7 engages the transverse portion 11, which is formed by a bend of the plate 1. It will be seen that the device is simple and cheap, and that it will greatly facilitate the collection of pennies, etc. on the part of the rural mail carrier.

Explosive Toy.

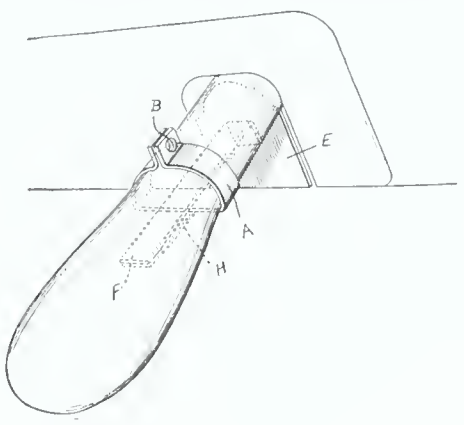
In spite of all the arguments for a safe and sane Fourth of July, there is an unappeasable craving in the soul of young America for a noisy celebration. Firecrakers being admittedly dangerous and toy cannon being prohibited in most centers of population, the problem remains to satisfy this craving without imperilling life. An explosive toy recently patented may be found an effective substitute. The noise is caused by the rupture of a diaphragm of paper by air pressure, and the whole device is so simple that it may be manufactured cheaply. It



has two handles, one with a loop adapted to receive a cup-shaped member 8 whicb holds a half ball of rubber, the cup being secured in the loop by pieces 10 partially punched out thereof. In the face of the cup is an opening over which a diaphragm is clamped, and this opening is surrounded by a lip which enters an opening 14 in the clamp 15, thus tightly stretching the diaphragm, and insuring a sharp report. The clamp is pivoted to the handle and the ends of the handle are secured together. The half ball 9 is thicker at the edges than at the centre, which means a saving in rubber and a strengthening of the ball where it is most likely to be injured. The diaphragm of paper is placed between the members 8 and 15 and the handles drawn together to bring the clamp down on the member 8. This stretches the diaphragm. By striking the thin central portion of the half ball 9 against any suitable object, it is collapsed, as shown in dotted lines in the top cut, and the air pressure thus generated ruptures the diaphragm, causing a loud and sharp report. The device is the invention of Albert A. Coup, of St. Louis, Mo., assignor of one-third each to O. R. Burkart and E. C. Teuscher.

Prevents Mice from Entering Pianos.

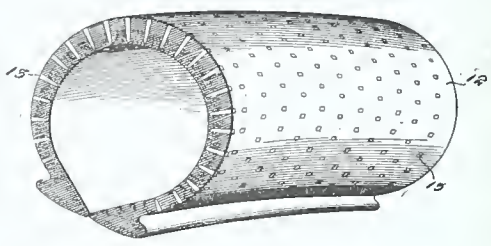
A great deal of damage has been done to pianos by mice finding their way within and eating the felt, and otherwise destroying the interior workings of these costly instruments. The most common means of access is through the openings for the pedals, and it has been difficult to exclude the tiny pests, without interfering with



the proper operation of the piano. Clarence B. Hill, of Mannington, W. Va., has invented a device to prevent this method of ingress, and it consists essentially in the provision of an adjustable attachment to the pedal, so arranged as to make it difficult for the mouse to run up. As shown in the accompanying cut, the pedal is surrounded with a band *A*, provided with apertures *B*, through which a screw or bolt passes and affords means to clamp the device securely in place. *E* designates a plate which may be of any shape and size, and has fastened thereto the angled end of a strip *F* which has a strap *H* secured at its ends to the face thereof and affording means whereby the band may pass between said strap and the face of the plate, the latter being held in adjusted position by means of friction. It will be obvious that the device prevents mice from entering the piano, and at the same time does not interfere with the working of the pedal.

Pneumatic Tire.

The great drawback to the use of the otherwise most advantageous and comfortable pneumatic tire, is that it is liable to blow out at any time, thereby causing delay and serious inconvenience. The bursting of these tires is largely due to the fact that the different layers composing the tires, which are secured together by rubber in the vulcanizing process, become detached or loosened, owing to the heat developed in running the vehicles; so that the bodies of the tires become greatly weakened and are unable to withstand the great pressures to which they are subjected, and consequently burst. Attempts have been made to remedy this difficulty by securing the different layers together by stitching, but this was found to be impracticable owing to difficulty in effecting the stitching. Of course the tires cannot be sewed while they are on the formers in the process of making, and after they have been removed from the formers, they are in such shape and are composed of such materials that it has been found difficult, if not impossible, to effect the stitching. Incidentally, in some tires which have been provided with non-skidding metallic studs or nails having exposed heads, the layers composing the tires have been secured together by such nails clenched at the inner sides of the tires, but for all practical purposes, in securing the layers composing the tires together, this has not proved to be of much practical use, for the reason that the exposed heads of the nails become greatly heated, and as metal nails themselves are good conductors of heat, the tires become greatly injured and the holdings of the nails become loosened by the heat, which rots out the tires around the nails. In the invention herewith shown (Wm. A. McCool, of Beaver Falls, Pa. is the inventor, and the Hercules Tires & Rubber Co., of Delaware, the assignee) the various layers composing the tires, which are stuck together as usual by rubber interposed between the pieces of canvas, are fastened permanently together by means of stickly studded pegs which are driven through the various layers while the tire is on the former; and after the layers are thus fastened, the pegs are secured by vulcanizing; a sheet of



rubber being applied to the outer surface after the pegs have been inserted, and the tire will then be vulcanized in the usual manner. The pegs may be inserted in shellac, if desired, and an inner layer of canvas is vulcanized to the inside of the tire, preventing the ends of the pegs from being so exposed as to injure the air tube. The pegs are ordinary wooden shoe pegs, though rubber or metal ones may be used, and they may be roughened to give them a better grip, if desired. A tire so constructed will be found to have a longer life than the ordinary pneumatic tire, as the layers are strongly secured together and cannot become loosened by the heat usually developed in running motor vehicles, which heat softens the rubber securing the layers together and allows them to work loose. The pegs being of wood or some such non-conducting material will not become loosened, so that the layers will remain in an integral body. The pegs will further not detract from the flexibility or elasticity of the improved tire.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

KEYSTONE TYPE FOUNDRY v. PORTLAND PUB. CO.

(Circuit Court of Appeals, First Circuit. March 10, 1911. 186 F. R. p. 690.)

TRADE-MARKS AND TRADE-NAMES—"UNFAIR COMPETITION."

The basis of an action for unfair competition is fraud or deceit, inducing the public to believe that defendant's goods are those of complainant; and where the likeness is in the goods themselves, because of the copying of the design of complainant's article, which is unpatented, and there is no attempt to deceive purchasers with respect to the manufacturer, there is no ground on which a court of equity can grant an injunction.

McCREERY ENGINEERING CO. v. MASSACHUSETTS FAN CO. et al.

(Circuit Court, D. Massachusetts. Feb. 3, 1911. 186 F. R. p. 846.)

1. PATENT — PATENTABILITY — INVENTION "ON SALE" FOR MORE THAN TWO YEARS.

A patentee of a ventilating apparatus, some three years before he applied for the patent, contracted to build and install in a church an apparatus according to plans and specifications shown and in substantial conformity with that of the patent, and to have the structure completed by a date more than two years prior to the filing of the application. Held, that the apparatus was "on sale," within the meaning of Rev. St. § 4886 (U. S. Comp. St. 1901, p. 3382,) at least by the date when it was agreed to be completed, although it was not in fact completed by that time, and that it rendered the patent void.

2. PATENTS—VALIDITY—VENTILATING APPARATUS.

The Taylor patent, No. 917,185, for apparatus for tempering and purifying air, is void, because the invention was on sale more than two years prior to the filing of the application.

NATIONAL BINDING MACH. CO. v. JAMES. D. McLAURIN CO.

(Circuit Court, S. D. New York. March 2, 1911. 186 F. R. p. 992.)

1. PATENTS—INFRINGEMENT—DEFENSES.

Infringement is not avoided by the fact that defendants' machine does not work as perfectly as complainants', provided it is intended to work in the same way.

2. PATENTS—INFRINGEMENT—BINDING MACHINE.

The Piper patent, No. 700,816, for a device for supporting and delivering paper for wrapping and binding purposes, claims 2 and 5 construed, and held infringed.

GENERAL ELECTRIC CO. v. HARTMAN et al.

(Circuit Court of Appeals, First Circuit. March 2, 1911. 187 F. R. p. 131.)

1. PATENTS—VALIDITY AND INFRINGEMENT—ELECTRIC SWITCH.

The Hewlett and Emmet patent, No. 800,916, for an electric switch of oil break type, designed for use in opening and closing electric currents of high potential, the essential feature of which is the making of the oil tank independent of and easily separable from the switch, to facilitate access to the contact points and other mechanism as well as to the oil and tank for purposes of inspection and repair, discloses patentable invention of a meritorious character, and is valid; also held infringed.

2. PATENTS—INVENTION-ELECTRIC SWITCH.

The Emmet and Hewlett patent, No. 789,597, for a high potential electric switch of the oil break type, designed to remove, or to minimize the disadvantages and hazards which in prior arrangements were created by breaking and closing the circuit of strong currents at points which were in proximity to soot deposits in the bottom of the oil-containing vessels, discloses patentable invention and utility, and is valid.

CONLEY v. KING BRIDGE CO.

(Circuit Court of Appeals, Third Circuit. April 12, 1911. 187 F. R. p. 137.)

1. PATENTS—VALIDITY AND INFRINGEMENT GUIDE FOR PUNCHING PRESSES.

The Conley & Conley patent, No. 701,544, for a guide for punching presses for punching holes in building beams or girders, at exact predetermined intervals, either the same or different distances apart, the purpose being to secure accurate coincidence of the holes in different beams to be joined together by bolts or rivets by means of separately adjustable stops, was not anticipated and discloses invention, and is entitled to protection to the full extent of the disclosure; also held infringed.

2 PATENTS— INFRINGEMENT—GAUGE FOR PUNCHING PRESSES.

The Conley patent, No. 735,469, for a gauge for punching presses, construed, and held not infringed.

VAN AUKEN et al. v. MONASH-YOUNKER CO. CONSOLIDATING ENGINEERING CO. et al. v. SAME.

(Circuit Court, N. D. Illinois, E. D. Feb. 11, 1911. 187 F. R. p. 141.)

1. PATENTS—VALIDITY AND INFRINGEMENT—DISCHARGE VALVE FOR STEAM RADIATORS.

The Van Auken patent, No. 828,153, for valve mechanism for discharging air and water of condensation from steam heating systems, was not anticipated, although the elements of the combination were all in the prior art in some form, and discloses invention; and, while not a pioneer in a broad way, the claims are entitled to a reasonably liberal construction. The first four claims, while broad in terms, must be limited by the specification and drawings to a structure in which the conduit between the radiator and the float chamber opens into the chamber above the line at which the water of condensation therein lifts the float. As so limited, the patent is not infringed by the device of the Boegen patent, No. 959,297.

2. PATENTS — INFRINGEMENT — DISCHARGE VALVE FOR STEAM RADIATORS.

The Canfield and Van Auken patent, No. 890,555, for a discharge valve mechanism for steam radiators, is not infringed by the device of the Boegen patent, No. 959,297.

GILLETTE SAFETY RAZOR CO. v. CLARK BLADE & RAZOR CO. et al.

(Circuit Court D. New Jersey. May 18, 1911. 187 F. R. p. 149.)

PATENTS—VALIDITY AND INFRINGEMENT—SAFETY RAZOR.

The Gillette patent, No. 775,134, for a razor having a detachable blade of such thinness and flexibility as to require external support to give rigidity to its cutting edge, was not anticipated, and discloses invention; also held infringed by the device of the Clark patent, No. 933,020.

DAVIS et al. v. A. H. REID CREAMERY & DAIRY SUPPLY CO.

(Circuit Court, E. D. Pennsylvania. Feb. 16, 1911. 187 F. R. p. 157.)

1. PATENTS — SUITS FOR INFRINGEMENT—LACHES.

Mere delay in the bringing of a suit for infringement of a patent, where it was because of the inability of the owner to bear the expense of the litigation, is not such laches as will defeat the suit

2. CHAMPERITY AMD MAINTENANCE—CHAMPERTOUS CONTRACT — INFRINGEMENT SUIT—AGREEMENT BY LICENSEE TO ADVANCE COSTS.

An agreement by a licensee under a patent to pay the expense of a suit for infringement in the first instance, to be reimbursed therefor from the proceeds of the suit or by credit on royalties under its license, where the owners of the patent were without means to conduct the litigation, is not champertous.

3. PATENTS—ANTICIPATION — CREAM SEPARATOR.

The Davis patent, No. 521,104, for a centrifugal separator for liquids, is void for anticipation by the German patent to Schultz of 1890.

RAMSAY v. LYNN et al.

(Circuit Court, W. D. Pennsylvania. Feb. 8, 1911. 187 F. R. p. 218.)

PATENTS—VALIDITY AND INFRINGEMENT—BRICK VENEERING APPARATUS.

The Ramsay patent, No. 685,410, for an apparatus for veneering brick, as they come from the brick machine, was not anticipated by patents in the prior art nor by prior use, but is novel and discloses invention, the device being one of great merit and value in the art; also held infringed.

HOWARD DUSTLESS DUSTER CO. v. CARLETON.

(Circuit Court, D. Connecticut. June 3, 1911. 187 F. R. p. 472.)

TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—PREVIOUS USE — COLOR OF ARTICLE.

Where complainant manufactured and sold an alleged dustless dust-cloth of black color, but he was not a pioneer in the business, he was not entitled to restrain defendant from manufacturing, and putting out in competition, a similar cloth made from black material purchased from another.

L. H. GILMER CO. v. GEISEL.

(Circuit Court, E. D. Pennsylvania. Nov. 29, 187 F. R. p. 606.)

PATENTS—VALIDITY AND INFRINGEMENT—BELTING.

The Gilmer patent, No. 723,379, for a belting, claim 7, which was added by way of amendment and is a much broader claim than the others and than the device described in the specification, if valid at all, in view of the prior art, cannot be construed to cover the device of the Gelsel patent, No. 726,670, which was invented pending Gilmer's application and was known to him before he added such claim. Also, held not infringed by such Geisel device if conceded validity.

In re DR. VOORHEES AWNING HOOD COMPANY.

(Circuit Court, M. D. Pennsylvania. Jan. 26, 1911. 187 F. R. p. 611.)

1. PATENTS—AGREEMENT TO PAY ROYALTIES—TERMINATION BY MUTUAL CONSENT.

A corporation organized to manufacture a patented awning under license contracted to pay the patentee a bonus of one per cent a foot for all awnings sold, with a guaranty of a minimum number of 10,000 the first year and an additional 10,000 each succeeding year. Held that, where the contract was terminated by agreement during a year, the patentee was entitled to recover as bonus for that year one per cent per foot on the awnings that had been actually sold up to the time of the termination only, the provision for a minimum number being applicable only in case that number had not been sold at the end of the year.

2. BANKRUPTCY — PROVABLE CLAIMS — LICENSE CONTRACT UNDER PATENT.

Where a corporation which as part consideration for an exclusive license to manufacture under a pateut had contracted to pay to the patentee a bonus or royalty on the patented article sold, with a guaranty of a minimum number during the year, became bankrupt before the end of the year, the patentee was entitled to prove a claim for the amount of royalty which had accrued up to the time of the bankruptcy at the minimum rate, irrespective of the number of articles actually sold.

3. BANKRUPTCY — PROVABLE CLAIMS — LICENSE CONTRACT UNDER PATENT.

The bankruptcy of a corporation which held an exclusive manufacturing license under a patent, to continue for its life, under a contract which required it to pay royalties on a minimum number of the patented articles each year, operated as an enforced termination of the contract, and the patentee cannot prove a claim for future royalities accruing during the remainder of the term; but he is entitled to prove a claim for damages for the breach of contract, to be estimated in view of the fact that, having fallen in, he is at liberty to again dispose of it.

4. CORPORATIONS — OFFICERS — CLAIMS AGAINST CORPORATION.

In the absence of an express contract to that effect, the president of a corporation is not entitled to a commission on stock or property of the corporation sold by him.

McDOWELL v. IDEAL CONCRETE MACHINE CO.

(Circuit Court of Appeals, Seventh Circuit. Jan 5, 1911. 187 F. R. p. 814)

1. PATENTS — REISSUES — AUTHORITY TO GRANT—INSUFFICIENCY OF "SPECIFICATION."

The Rev. St. § 4916 (U. S. Comp. St. 1901, p. 3393), authorizing the issuance of a reissue patent where the original is inoperative or invalid "by reason of a defective or insufficient specification," the word "specification," by settled construction, may include the claims as well as the technical specifications preceding them.

2. PATENTS — REISSUES — AUTHORITY TO GRANT.

The Commissioner of Patents is without jurisdiction to grant a reissue in lieu of an original patent, unaltered save by the addition of enlarging claims, and where the original described and illustrated by its drawings an operative machine which was fully covered and protected by its claims.

3. PATENTS—REISSUE—VALIDITY-MACHINE FOR MAKING CONCRETE BLOCKS.

The Borst and Groscop reissue patent, No. 12,598 (original No. 735,938), for a machine for manufacturing hollow concrete blocks, is void for lack of jurisdiction in the Commissioner to grant the reissue, the original not being inoperative or invalid.

MONEY WEIGHT SCALE CO. v. TOLEDO COMPUTING SCALE CO.

(Circuit Court of Appeals, Seventh Circuit. Jan. 3, 1911. 187 F. R. p. 826.)

1. PATENTS—REISSUES—VALIDITY.

Authority to grant reissue patents is derived exclusively from Rev. St. § 4916 (U. S. Comp. St. 1901, p. 3393), and the commissioner goes beyond his jurisdiction if he grants a reissue for an invention other than the one disclosed and described in the original patent, which, by reason of inadvertence, accident, or mistake, is inoperative to secure the monopoly it shows on its face was intended to be secured.

2. PATENTS--REISSUES.

The inadvertence of the solicitors of an applicant for a patent is his inadvertence, and, on the other hand, their erroneous judgment in submitting to the rejection of claims is his erroneous judgment, and he is estopped from presenting any of such rejected claims in an application for a reissue.

3. PATENTS—REISSUES—INADVERTENCE.

Where none of the original claims presented by an applicant for a patent was adequate to cover the invention disclosed by the specification and drawings, acquiescence in the rejection of such claims is not an abandonment of the invention as an entirety, and the failure of his solicitors to submit adequate claims is an inadvertence which may entitle the applicant to a reissue.

4. PATENTS—VALIDITY AND INFRINGEMENT—COMPUTING SCALE.

The De Viblis reissue patent, No. 12,137 (original No. 649,915), for a computing scale, is not invalid as departing from the original invention, and it also covers a true combination which produces an improved result and discloses invention. Also held infringed.

RAND, McNALLY & CO. v. EXCHANGE SCRIP-BOOK CO.

(Circuit Court of Appeals, Seventh Circuit. Jan. 10, 1911. Rehearing Denied April 11, 1911. 187 F. R. p. 984.)

PATENTS—VALIDITY AND INFRINGEMENT—EXCHANGE SCRIP-BOOKS.

The Richardson and Langston patent, No. 669,489, for a scrip-book containing a series of coupons to be detached and exchanged for passage-tickets, the essential feature of which is that the units are expressed in money instead of miles, as in ordinary mileage tickets, which adapts them to more convenient use on transportation lines having different rates, discloses patentable invention, and is valid; also held infringed.

SPIEGEL et al. v. ZUCKERMAN et al.

(Circuit Court of Appeal, Secoud Circuit. Mary 25, 1911. 188 F. R. p. 63.)

TRADE-MARKS AND TRADE-NAMES-PERSONS ENTITLED—PRIORITY OF USE.

Complainants held not to have acquired the right by registration under the statute to the exclusive use of the word "Princess" as a trade-mark for shirt waists, on evidence showing an extensive use of the word in connection with shirt waists by others throughout the country for several years prior to the earliest date of its use by complainants.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

John W. Guthrie, Falls Creek, Pa. Valve Mechanism for Steam Engines.—The objects of this invention are to provide a valve mechanism of that type in which a rotary valve opens and closes the ports to admit and exhaust the steam alternately to and from the oposite sides of the piston for reciprocating the latter, and an improved connecting means between the rotary valve and its actuating means, whereby the valve may be retained on its seat and rotated without undue binding. The invention consists of a cylinder, a piston therein, a valve chest, ports between the valve chest and ends of the cylinder, a rotary valve periodically registering with the said ports for admitting and exhausting the steam, a valve stem, and means driven by the engine for rotating the stem, and a spring interposed between the valve and inner end of the stem and tensioned to move the stem and valve apart for holding the valve rotatably on its seat.

George A. Graydon, Gloversville, N. Y., inventor; Frank E. Bonfey, Gloversville, N. Y. assignee of one-half interest. Throat Plate and Presser Foot Slide for Sewing Machines.—The object of this invention is to provide an improvement on a throat plate and presser foot for twin needle machines used for silking the backs of leather and other gloves. The invention aims to obviate the changing from one set of throat plates and presser feet to another, which causes considerable loss of time and trouble to the operator, and to provide a throat plate and a presser foot with which interchangeable slides can be used for the various kinds of silking. Another advantage is that the ribs of the slides are formed integral therewith so as to overcome the difficulty experienced with the previous construction, wherein the ribs were formed by wires soldered in place so that breakage of the rib was a common fault. Improved means are also provided for retaining the slide in the throat plate. The invention comprises a throat plate having a needle opening, and a channel in its top surface extending from one edge to the needle opening, a rib carrying slide disposed in the channel, a recess in the above mentioned parts, and a spring secured to the upper part and arranged to releasably engage in the recess to hold the slide in place.

Elmer E. Bumpus, Kalispell, Mont. Separable Hinge for Screens.—The separable hinge of this invention is designed for use with vertically swinging sashes, transoms and the like, although more particularly adapted for use with other half length or full length window screens; and its objects are to provide a device which will permit a sash or screen to readily disengage from the hinge by a slight vertical lift of the same, and also capable of accomplishment by an operator from the inside of a room. The invention consists of a pair of plates adapted to be secured on either side of the frame, upwardly inclined guides respectively pivoted thereto by a vertical pivot, each guide having an open and a closed end, and pintle-carrying plates respectively arranged on a sash or screen at such positions that the pintles will co-act with the closed ends of the guides to form a bearing for the said sash or screen.

Charles N. Hiner, Staunton, Va. Window Shade Hanger.—The object of this invention is to improve the construction of window shade hangers, and to provide a device of great strength and durability, capable of ready adjustment to windows of different lengths, and adapted to permit a window shade to be moved bodily upward and downward, to arrange it either at the top of the window or in spaced relation to the same to provide an open space at the top of the window for affording ventilation; the device being compactly arranged so as not to interfere with the free operation of the window shade in working on and off the roller in any adjustment of the hanger. The invention includes spaced tubular guides, slides operating in the guides, a slidable frame connected with the slides, a spring actuated roller mounted on the slidable frame, flexible strips arranged to be wound around the roller for moving the frame in one direction, and an operating device connected with one of the slides and operating within the tubular guides for the same.

Alexander Lawson, East Barre, Vt., Robt. S. Wilbur and Bernice Wilbur, Websterville, Vt. Automatic Rocking Chair Fan.—The object of the invention is to provide a fan attachment adapted for use in connection with rocking chairs, whereby a draft of air will be directed upon the occupant of the chair while rocking the same, the fan being adjustable to different positions to operate to the best advantage. The invention consists of a base frame provided with a rail for the rocker of a chair, an extensible standard mounted on the frame, a rotatable fan carried by the standard, operating connections between the fan and rocker including means providing for the lengthening and shortening of the standard, and a spring device operatively connected with the said rocker and independent of the said operating connection, to assist in returning the chair from tilting to central or normal position, and operating through the said connections to assist in rotating the fan.

Elbert Ascue, Blum, Texas, inventor; R. H. Crank, Cleburne, Texas, assignee of one-third interest in each patent. Two patents. The invention of the first patent is a sewing machine, designed particularly for sewing bags, but adapted for various other purposes, and it resides principally in a helical needle, adapted to be passed through the goods and withdrawn therefrom to form stitches without the necessity of twisting or turning the hand, thereby providing a sewing device that is exceedingly convenient to use and one that may be operated with comparatively great rapidity.

The second patent relates to sheep shears, and the aim of the invention is to provide means for preventing a pair of shears from lacerating or otherwise injuring the skin or pelt of a sheep or other animal, whereby the same may be sheared with greater safety and rapidity than has heretofore been possible. The invention also provides yieldable means to be grasped by the operator for cushioning the hand so that the shears may be easily operated without cramping the thumb and fingers.

Gustav Holtz, Goldsboro, Pa., inventor; The Hamilton Manufacturing Co., Two Rivers, Wis., assignees of the entire right of the first patent. Four patents.—The object of the invention of the first patent is to provide a dental bracket, capable of quick adjustment to swing it vertically and horizontally and to vary its length, whereby the tab'e may be readily arranged at the proper elevation and in the proper position to suit the operator. The bracket is equipped with locking mechanism having a plurality of locking devices adapted to hold the bracket in its adjusted position and arranged to be manipulated without the operator releasing his hold on the hand piece.

The second patent relates to a dental or surgical chair, characterized by hydraulic or other motive fluid lifting mechanism, by means of which the seat or chair proper may be raised or lowered and thus properly positioned to accommodate the patient and the operator. The lifting mechanism is constructed in a manner which will permit it, together with its various appurtenant devices, to rotate with the chair, so that the controlling means, as for instance, the pump operating and the fluid releasing devices, as well as the locking mechanism for securely holding the chair after its adjustment has been effected, will always remain in the same relative position with respect to the chair seat, to facilitate their actuation by the operator irrespective of the position to which the chair may be turned.

It is the aim of the invention of the third patent to enable dental bracket tables to be maintained in a perfectly sanitary condition, and to accomplish this purpose a sanitary dental bracket tray, designed for use on dental wall brackets, and capable of also being applied to the ordinary wooden dental bracket tables in present use, is constructed of glass and is provided with scalloped edges for holding the dental instruments separated from one another and for preventing the instruments from rolling.

The fourth patent is along the same line as the last and relates to a sanitary dental bracket table, and the primary object of the invention is to enable an ordinary wooden dental bracket table in present use to be maintained in a perfectly sanitary condition, by equipping the same with a sanitary dental bracket tray, which is adapted to be readily applied to and removed from the bracket table, and is capable of fitting snugly within the marginal flanges of the same, so as to be held firmly against accidental displacement.

Heber K. Hansen, Logan, Utah, inventor; Fred Turner and N. Ralph Moore, assignees, one-half interest in second patent and one-quarter in third patent; Robert Lafount one-half interest in the fourth patent, and Lucien C. Farr, one-half interest in first patent, Logan, Utah. Four patents.—The first patent relates to an extension stove pipe, adapted to enable common piping to be readily adjusted to fit any space between a stove and the angle or elbow leading to the flue without cutting the pipe sections. It consists of a longitudinal ratchet bar rigidly connected to one of the telescoping sections of the pipe, which bar is adapted to engage a combined guide and catch secured to the other section, both the bar and the catch being arranged within the sections of the pipe.

The second patent covers a grain separator, and the purpose of this invention is to provide means, whereby a thorough preliminary separation of the chaff, dust or the like from the grain and seed, a secondary separation of the different grades of seed, and a final separation of the heavier trash and different types of seed or grain, are successively accomplished by a novel combination of elements which make up a machine of great efficiency.

The third patent covers a novel screen employed in the grain separator of the second patent, though it is capable of use in other relations, and will serve to effectively operate on different classes of seed or grain passed over it, and produce a proper separation of the same, permitting one type to pass through it and prohibiting the passage of grain of other characters. The screen consists of a plate having elongated openings therein, which are arranged in transverse rows and in staggered relation, each opening being located lengthwise of the plate.

The object of the invention of the fourth patent is to provide a spring hinge, which will be entirely concealed, which will permit a door to be swung freely in opposite directions and will depend upon the torsional elasticity of a metallic rod for its resiliency. The rod is located in a longitudinal recess provided in the rear of the door, and is attached at one end to the door and at the other end to the door casing.

Oscar C. Moon, Pittsburg, Pa., inventor; August Stickel, Jr., Connelsville, Pa., assignee of one-half interest in first patent. Two patents.—The first patent covers a lubricating axle, adapted to permit either oil or grease to be employed as a lubricant for vehicle axles, and of positively feeding such a lubricant to the spindle and of effectually preventing the lubricant from leaking or otherwise wasting. The lubricating axle is equipped with means for preventing the operating device from being affected by the jar and vibration incident to the motion of a vehicle, so that there is no liability of the parts becoming lost, or lubricant being accidentally fed to the axle.

The second patent relates to an emergency controlling apparatus, adapted especially for use in connection with gas service pipes, whereby the supply can be cut off under abnormal conditions, either automatically or manually, and thereby insure safety to the occupants of a building from suffocation, and at the same time prevent a conflagration. The invention comprises an assemblage of electric devices, instrumentalities and circuits for permitting abnormal variations in the pressure of gas or other fluid to close automatically a cut-off valve, there being manual means, whereby the controlling means for the cut-off valve can be operated independently of the pressure controlled means, for cutting off the supply of gas in case of fire in any part of a building.

Joseph I. Mengis, Vicksburg, Miss. Adjustable Journal Box for Rocker Shafts.—The invention is designed for supporting rockers or rocker shafts of locomotive valve motion and other like apparatus, the main object being to construct such journals with adjustable bearing brasses or bushings, whereby wear on the bushings may be taken up and compensated for, and the rocker shaft adjusted laterally to suit various circumstances. The bushings are held rigidly in their adjusted position within the journal box to secure a firm contact with the box on all sides of the bushings, and to provide for a firm engagement between the yoke and supporting frame and the journal box.

William Schuster, Parkersburg, Iowa. Draft Equalizer.—The object of the present invention is to provide a draft equalizer, adapted to remove all side draft from the tongue and secure a direct draft on the wagon, by applying the draft to the front and rear axles, thereby obtaining a draft which is always parallel with the tongue. It comprises, in its construction, a flexible connection, attached at one end to the front axle and at its other end to the hind axle, and a draft appliance located ahead of the front wheels and having a pulley through which the flexible connection passes.

NEW PATENTS FOR SALE.

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FOR SALE—Patent No. 1,004,775. Foot-rest for registers and radiators. Cash or royalty. Address, Margaret B. Goodwin, 210 East 4th Ave., Denver, Colorado. mar

FOR SALE—Patent No. 1,002,164. Portable Power Cut-off Saw. For felling trees and sawing the trunks into blocks. Price low. Property in exchange and royalties considered. Address, W. C. Lipscomb, Crockett, Texas. mar

FOR SALE—Patent No. 984,903. Gas Hose Clamp and Holder. Prevents the hose from coming loose, leaking and breaking. Sample ten cents. Address, A. and G. Gradel, 818 John St., West Hoboken, N. J. mar

FOR SALE—U. S. Patent No. 1,002,155, dated Aug. 29, 1911, Up-to-date automatic wagon brake. Will sell reasonably. For further particulars and drawings, apply John P. Jensen, Foley Brook, New Brunswick, Canada. mar

FOR SALE—Patent No. 999,383, issued Aug. 1, 1911. Improved Shaft Support. Can be quickly applied to harness. A very handy device. Am manufacturing now. Will sell my patent rights. For particulars address, Fred Lursen, Jr., R. No. 2, Box 34 Menno, S. Dak. mar

FOR SALE outright—U. S. Patent No. 1,004,655, dated October 3, 1911. Corn Planter Wheel. An open wheel with detachable concave tire. Two kinds of wheels in one. Address, S. P. Johnson, West Point, Nebr. mar

FOR SALE—Patent No. 1,006,364, issued Oct. 17, 1911. What am I offered for absolute non-derailable car and a track having a crossing and automatic switch? Worth a million. On royalty five cents per mile. Address, I. M. De Pew, Palma Sola, Florida. mar

FOR SALE—Patent No. 1,006,337, dated Oct. 17, 1911, Folding scaffold to be applied to windows. Constructed entirely of round metal bars. For use by painters, window-cleaners, etc. Address, Ernest Zahn, 22 Magnolia Avenue, Norwalk, Connecticut. mar

FOR SALE—Patent No. 1,004,475. Car Step. An extensible step for railroad cars. Fills a long felt want. Address, Mrs. Anna A. Schrader, Mt. Olive, Illinois. mar

FOR SALE—Patent No. 1,006,266. Railway Cross Tie, made of steel strips. Simple and inexpensive to manufacture. The best tie ever invented. Patents in the United States, Canada and Mexico. Address, V. L. Miller, Miller, Wyoming. mar

FOR SALE—Patent No. 976,988, dated Nov. 27, 1910. Wave Motor. Strongest and cheapest in the world. Will generate electricity at a minimum expense. Sure to pay a large income to promotors. Wish to sell outright. Apply to Benjamin Cutler, Crawfordsville, Oregon. feh

FOR SALE—Patent ginseng-shade, by practical grower. Indispensable and labor saving in the cultivation of ginseng and golden seal, a growing industry. Will be a profitable business for some lumber manufacturers. Will explain upon application. Address, L. B. Hetrick, Route 29, Elwood, Ind. feh

FOR SALE—U. S. Patent No. 993,223. Improved quick adjustable wrench. Best yet. Big money maker for somebody. Will sell part or entire right to the highest bidder, with working model thrown in. Address, Clyde O. Carlyle, Clyde, N. Dak. feh

FOR SALE—Patent No. 1,003,167. Combined Water Tower and Fire Escape. Will sell outright this valuable patent. All offers considered. Address, Erasmo Magliocca, No. 655 Main St., Woburn, Mass. feh

FOR SALE—Patent No. 998,118, dated July 18, 1911. Improved knife for cutting broom-corn. Easy to operate. Can remove the leaves from the corn stem without inserting the fingers under the cutting edge. Will sell for cash to the highest bidder. Address, Emil A. Peterson, R. D. No. 1, Falun, Kansas. feh

FOR SALE—Patent No. 1,000,503, dated August 15, 1911. Expansion Reamer. Very simple and profitable. Can be extended to various degrees. The blades can be readily exchanged. Address, E. Ferencik, 366 66th Ave., West Allis, Wisconsin. jan

FOR SALE—Patent No. 978,844. Automatic Car Dumper. Just the trick to be used around mines for dumping coal. For further information, write Van C. Calhoun, Dublin, Ark. jan

FOR SALE—Patent No. 977,428. Movably supported lantern carrier by which a lantern may safely and easily be suspended in a barn. Address, Andrew J. Aune, Milton, N. Dak. jan

FOR SALE—U. S. Patent No. 999,406, dated Aug. 1, 1911. Sack Holder. Will sell outright or on royalty. Address, Charles C. Skelton, Butler, Indiana. feb

FOR SALE—U. S. Patent No. 1,002,557. Fluid Gage. The simplest and cheapest to manufacture. Invention intended for autos. Can be used in the opening for filling the tank. Address, James H. Birchard, Box 229, Kenosha, Wisc. feb

FOR SALE—Patent No. 992,719, dated May 16, 1911. Spring Wheel for Automobiles. No danger of puncture: is very practical and cheap to make. Will sell for moderate price. Address, Grant Leeper, 514 South Church St., Visalia, California. feh

FOR SALE—Patent No. 1,003,831, serial No. 583,231. Holder for Drinking Cups. Individual, sanitary, ornamental, Principally for public schools and offices in states and cities where sanitary laws have been passed. Enquire of J. B. Walker, P. O. Box 145, Rush Springs, Oklahoma. jan

FOR SALE—Patent No. 1,001,337. Mine Cage Signal. A cheap and reliable signal system, for all kinds of deep mines. I will sell, lease, or form company to manufacture. It is fireproof and rust-proof. The cost of maintenance should not exceed $1,00 per year for 39. Address, Lee Bayer, Willisville, Ill. jan

FOR SALE outright—U. S. Patent No. 991,496, dated May 9, 1911. Sewing Machine Guard. Surrounds the bobbin winder and driving wheel. Protects cloth from grease and dirt. In no way conflicts with the operator. Will fit any machine. Address, Mrs. Gertrude Frye, Eureka, Kan. jan

FOR SALE—U. S. Patent No. 907,919. Box Lid Clamps. Will support box lid at any desired inclination for display purposes. Very simple device. Address, C. J. Turner, Monticello, Iowa. feh

FOR SALE—Canadian patent on a woven wire stretcher. The only machine that pulls the wire up to and past the end or corner post, thus avoiding the necessity of setting an extra or anchor post. Address, J. H. Matthews, Monticello, Iowa. feh

FOR SALE—Patent No. 996,312, dated June 27, 1911. Insulator. Is particularly adapted to withstand sleet and storm. Does not need any short wire to tie same, and because of lying close to timber cannot easily be broken by stones thrown by boys. Will hold two wires as well as one and with the same ease in handling. Because of its safe construction is specially adapted for use in cities. For full particulars address, T. D. Childress, Ansted, W. Va. jan

WANTED.

WANTED—A company or firm to manufacture rotary engine, patent No. 995,076. U. S. A. on shares or royalty. Address, T. G. McGonigle, Lambton Mills, Ont. Canada. jan

WANTED—To correspond with manufacturers regarding the manufacture and placing on the market of two good patents having practically an unlimited field for their operation. Address, P. O. Box 30, Falling Spring, W. Va. jan

WANTED a Company in the U. S. to manufacture my saw-fitting device, patent No. 972,789, dated Oct. 10, 1910. Also a company in Canada to manufacture same device, Canadian Patent No. 124,345, dated March 8, 1910. I will sell either or both of said patents. Address, C. R. Pierce, Rainier, Washington. jan

WANTED—Not for sale but want a company to manufacture my manure loader on royalty, Patent No. 918,695. Address, Lars C. Peterson, Osage City, Kansas. jan

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WASHINGTON, D. C., JANUARY 1, 1912.

REPORT OF THE COMMISSIONER OF PATENTS.

The report of the Commissioner of Patents for the last fiscal year, just issued, brings out one striking fact—the decrease in the number of patents issued during the period under review. For years, the number of patents issued has been steadily growing in a manner commensurate with the general increase of business and industry. During the last year the number issued, instead of increasing or even remaining the same, has actually decreased, and that to the extent of nearly three thousand. This condition is rendered more salient by the fact that the number of applications showed the usual increase. Of the total number of applications for patent, 65,000 in round numbers, only about half, or 33,500, were granted. The figures do not, therefore, indicate a diminution in the inventive energy of the country, but a change in the policy of the Patent Office. A large number of the applications are for inventions that are old or clearly unpatentable; but there are many others that, while perhaps narrow in scope, are nevertheless worthy of protection, and under the policy formerly pursued by the Office these inventions would have been granted letters patent. Recently, however, new methods seem to have been in vogue among the examining corps, and many of the officials appear to have become hypercritical and captious in their actions on patent applications. The result has been, as above noted, a falling off in the number of patents issued. Another effect of this new policy has been a decrease in the receipts of the Patent Office. This bureau has long prided itself on being not only self-supporting, but on returning a handsome surplus to the Treasury over its expenditures—a condition that is true of few government offices. This surplus of receipts, amounting to more than seven million dollars in the aggregate, has been used as the basis of an argument for the erection of a new building, which is sadly needed. For years the annual surplus of receipts has been in the neighborhood of a hundred thousand dollars, and sometimes has been over two hundred thousand. During the last year this surplus has been reduced to about $30,000, and with the continuance of the present system, it promises to disappear altogether. Instead of sustaining its boast of financial independence, the Office bids fair, before long, to face a deficit, and to be forced to ask Congress for an appropriation. Thus the meticulous policy is militating against the Office as a whole, besides injuring the interests of many inventors, who are no longer given the benefit of a doubt.

This policy, we would note, is apparent only in certain divisions of the Office. In regard to examiners as a body, we wish to heartily endorse a statement of the Commissioner in the present report. He says:

"I do not believe there is anywhere in the government service a more competent, intelligent, hard-working, or efficient class of employees than can be found in the Patent Office. The examining corps today is made up entirely of men who have been graduated from various technical colleges and schools, and they possess a very thorough foundation of knowledge when they enter the Office through the competitive examinations. With but a few exceptions they all take courses at some of the law colleges of Washington which provide night sessions, with the result that in about four years of service they become graduates and are admitted as members of the bar, both in general and in patent law."

The Commissioner thus emphasizes the need of a new building:

"It is, of course, well known throughout the country among inventors and manufacturers and the public generally that the present accommodations for the Patent Office are entirely obsolete and inadequate as to both space and equipment, and are so much so as to seriously interfere with the expeditious and careful handling of the work of the Office and a downright hardship to the inventors and the public. Congress has provided more force and larger salaries; but the great present need today in this Bureau is more room.

"I submitted to Secretaries Garfield and Ballinger, plans for the remodeling of the present building, in order to provide additional space. The plans called for the excavation of the sidewalks around this building, so as to provide suitable storage vaults roofed with cement walks, lighted beneath by electricity, and affording a housing for the several million copies of patents which are necessary to retain in stock, where they are called for daily, and which now fill every available foot of blank wall and storage-space in the present building from the basement to the roof, with the exception of what is termed 'the secretary floor.'

"These plans also contemplated the removal of the mass of earth in the court, which rises ten feet above the lower basement rooms, shuts off light and makes those rooms damp, and the erection on the level space thus obtained of a one-story building with a glass roof, which would also afford many thousands of feet of storage-space; also that a structure two rooms wide be erected from north to south across the court, four stories in height, which would give additional rooms for the working force without cutting off light and air, and that the roof of the present building be raised and another floor placed in the top story, which was formerly used for model-halls. There is great waste of space in the present building, which was erected before any such large increase in the business of the Patent Office was expected. Another floor could easily be put in and basement, sidewalks, and court excavated, as suggested, which would afford accommodations for the Patent Office, and the Secretary's office, too, which is also congested.

"The present structure is not fireproof and is piled high with tons upon tons of inflammable matter, comprising the secret archives of the Office, which, if destroyed, could never be replaced and the loss of which would work untold damage to the commercial interests of the country. Much of this material is stored in wooden cases and on open shelves, subject to the ravages of time and other destructive agents. There are also recorded in this Office the deeds of all assignments of titles to inventions, which are of the greatest value in determining the ownership of valuable patents, and the loss of which by fire or otherwise would be a tremendous blow to the commercial interests of this country.

"Many tons of valuable books and reports were removed from the basement in a rotted condition, owing to the dampness caused by the earth of the court, and the conditions are so deplorable that I think some immediate action should be taken by Congress, which is quite conversant with the conditions. The District fire department and other officials were invited by Chief Clerk Ucker to inspect, and they have pronounced the building unsafe as to fire, and the engineers of the War Department have said that the walls should be lightened of their great weight, especially in the northwest corner of the building. All these reports are on file in the Department.

"If you will permit me, I will suggest that some suitable building be rented for the Patent Office, to be used until the present building could be thoroughly remodeled, and, if thought desirable, when that is done the bureaus which are now in rented quarters—such as the Geological Survey, the Reclamation Service, and the Bureau of Mines—could be housed in the present Patent Office Building and a new building erected to accommodate the constantly-growing force and business of the Patent Office while the Patent Office was occupying temporary quarters.

"A bill was introduced by the late Senator Daniel in the Sixty-first Congress (S. 1629) providing for the erection of a new building for the Patent Office on the property adjoining the Congressional Library on the north. This is a desirable site, as a subway could be arranged which would give the Patent Office access to the Library of Congress and the readers in the library would have access to the Scientific Library of the Patent Office. That site, too, it is thought, would be very convenient to out-of-town inventors, manufacturers, and attorneys arriving at the Union Station, which is within three squares of the proposed site, and as there are several first-class hotels in the immediate neighborhood it would be an ideal location.

"Great Britain and Germany have each been forced within the past five years to provide larger buildings, owing to the great annual growth of business pertaining to patents, trademarks, designs, labels and prints.

"I cannot too strongly urge the great need of immediate and special relief for this Bureau, both as to room and safeguards against fire as well."

In advocating improvement over the present conditions in the Patent Office, the Commissioner is on safe ground. Words are inadequate to describe the conditions that prevail in many of the Examiners' rooms. Eight or ten men are crowded into one room, many of them so far away from the windows that they are obliged to depend upon artificial light for their examination of the fine details of the drawings presented with applications for patent. Many of the Examiners are young men and so are able to endure the situation, but it is a shame that the Government does not provide more commodious, better lighted and better ventilated quarters for its employees. Commissioner after Commissioner, administration after administration, have urged Congress to take action in this matter. While the plan for additional space, outlined in the above quotation, might temporarily relieve the congestion, there is no question that a new building is the only proper solution to the problem.

As to the new legislation proposed by the Commissioner, we cannot so thoroughly endorse his suggestions. He proposes that all applications for patent should be completed and prepared for examination within six months after filing. This would shorten the term from one year to half of that period. The term was changed from two years to one year about ten years ago. It is conceded by practitioners generally that six

months is too short a time. We believe that this plan is unwise, and we should regret to see it enacted into law.

Another suggestion is that an applicant be required to furnish additional photographic copies of drawings when he files his application. This is intended to make it impossible for drawings to be changed after filing; but the Office may now photograph each drawing and keep a copy in its secret archives, so that additional precautions seem superfluous. To make the applicant furnish extra copies would increase the cost of the patent, the burden falling on the inventor and the attorney. Since the drawings are already in the custody of the Office, and no attorney can make corrections without first filing a print, there is not one chance in ten thousand that the drawings can be altered without the authority and knowledge of the Examiner in charge. In view of the above, and of the penalties involved, there seems little necessity for the change.

The Board of Appeals bill has already been discussed in these columns, and we have dissented from the Commissioner's views. There is a general impression that the whole plan is for the purpose of making the positions of the Commissioner and the two Assistant Commissioners permanent, which would, in effect, give the present incumbents a life lease on their offices. We believe there are already too many life positions. We have always felt it was a mistake to appoint judges for life. It is almost impossible to remove a judge, no matter how incompetent or dilatory he may be, because crime or extraordinary misdemeanor have to be proved first. To apply this system to the Patent Office would, we think, be unwise. We do not believe Congress will consent to it.

Another objection to the bill is that it places it in the power of the Commissioner to designate any three members of the Board to hear certain appeals. We can imagine a case in which important interests were involved—and in many cases before the Board, thousands of dollars depend on the decision—and the opinion of one of the members might be known to be adverse to a certain party. A representative of that party might see the Commissioner, and ask that this member be given other work, and another member be assigned to pass upon the case. The result of the bill would be that the Commissioner would not only control his own office and all the Examiners, but he would control the Board of Appeals as well. For years the Board has been recognized as the only independent body in the Office. Independence is its chief characteristic, and this gives it value as a judicial tribunal. The members may not always be right in their judgments, but every one who practices before the Office believes that they try to be right, and if they err, it is not through influence or partiality, but because their view of the law and the facts require them to decide as they do. We favor some plan which would divorce the Board completely from the Commissioner, instead of one which would subordinate it to that official. A bill has been prepared along these lines, and we think it better than the one under review.

Non-Sinkable Clothes.

A German engineer is said to have invented a fabric designed to make clothing so buoyant that it will keep the wearer afloat in the water. In a demonstration of this material, German soldiers, in full marching kit, clad in uniforms lined with the new goods, threw themselves into the water, and not only did not sink, but were able to tread water and fire. Bathing suits of this material would win immediate popularity.

Firing Glass.

A new method of making stained glass is to place the pattern of the glass itself in mineral pigments, and then fire it into the same by heat so intense that glass and color become fused into an impervious whole. At the same time the face of the glass receives a curiously pebbled surface, giving the color a soft, mellow effect. Each panel is bent separately into shape by the application of heat and is complete in itself, requiring only to be assembled in a metal frame to form the complete picture. Every part of the pattern is said to be transparent, no matter how intricate the design. This new glass is said to be far superior to the ordinary stained article with heavy lead and metal lines.

Matches of Straw.

Straw has been found to be more economical as a material for match splints than wood. The straw is passed through crushing rolls, and then between cylindrical cutters which divide the flattened straws into strips. The surfaces of the cutters are deeply serrated, and are placed together so that the groove of one cutter receives the raised ring of the other. The strips, supplied with adhesive, are then fed to a traveling band, and are enclosed on top and underneath with layers of paper. The layers of straw and paper pass through rolls under pressure, between a pair of chains, the links of which form metal molds and are constructed with longitudinal grooves, the edges of which meet opposite one another. The molds so formed are heated, and press the straws together for a sufficient time for the adhesive to harden. After passing between the chains the straw and paper issue in the form of a layer of round splints, which are cut into the lengths required and dipped at the ends into the composition to be ignited.

Automatic Transportation.

A unique system of automatic conveyance is in use at certain coal mines in Pennsylvania. It consists of a series of metal posts, capped by iron Y's, which support a double steel track of 30-inch gauge, elevated a short distance from the ground. The motor cars, or carriers, are intended to travel automatically on these parallel rails. One side of the track serves as a trolley, and the other as a return. To prevent sleet and ice from interfering with the operation of the line, the "trolley rail" is V-shaped on the under side, and in this groove the trolley runs. A train of two cars and four trailers will carry 16,000 pounds of coal at a trip. The carriers operate automatically, dumping the coal and returning empty to the coaling chute at the mine. A central generating plant furnishes the power, unless storage battery trucks are used. The cars move something after the manner of the cash carriers in department stores, except that they are self-propelled, by little motors, and that they travel up hill and down dale.

It is suggested that a similar system could be used for delivering mail in rural communities. The car could be made to slow down at the proper place, leave a box containing the farmer's mail, pick up another holding outgoing mail, and proceed to the next station, moving at the rate of 20 miles an hour. The same method could be employed for the delivery of packages of merchandise.

Air Shrunk Foods.

To get fresh vegetables in winter, at moderate prices, sounds Utopian; but this is what a new and simple process has made practical. The vegetables will be dried, but will retain their original palatability. Hitherto processes employed for this purpose have depended on high temperatures, which cause the escape of the volatile oils and ethers and so alter the flavor of the products. By the new method, the peas, beans, potatoes, cabbage, etc., are placed on small cars in a tunnel, through which a current of moderately warm, dry air is kept continually passing. The air literally sucks the moisture out of the vegetables, and they are reduced to such a condition of dessication that a pound of dried spinach, for example, is equivalent to 18 pounds of fresh spinach. A pound of carrots represents ten pounds of the fresh article. A pound of cabbage is equivalent to fourteen pounds of the fresh, and so on.

Vegetables treated in this way keep for an indefinite period. When they are wanted for use, all that is necessary is to pour cold water over them, and allow them to remain thus immersed for three hours, at the end of which time they will have absorbed a normal percentage of water, and will be ready for use like fresh vegetables.

Since prehistoric times, housewives have had to solve the problem of preserving foods. The woman of the stone age dried certain seeds and fruits. We dry fish and beef, and the Chinese dry oysters and market them on a large scale. Dried milk is an important article of commerce in this country, requiring only the addition of boiling water to make it available for use. Many thousands of pounds of dried eggs were purchased by the Navy Department for the cruise of the battleship fleet around the world, and the men found them palatable, tasting exactly like the fresh article when prepared in certain ways. Every housewife buys beans, rice and peas in a dried state, as well as peaches, plums and apples. Soup vegetables are now being regularly put up in the form of powders. Celery powder, asparagus powder and others make possible a variety in the menu. Drying is Nature's method of preserving, and there is none quite so effective or satisfactory. Hence the value of the new process for dessicating vegetables and fruits. This process involves the use of large quantities of calcium chloride, over which the air is passed to deprive it of its moisture before it comes in contact with the garden truck spread on the cars in the tunnel, and an arrangement of fans is utilized. The fruits and vegetables thus treated preserve not only their flavor, but also their fresh color and appearance, so that no matter how long they are kept, they always look appetizing.

A Basic Patent.

Since the Selden patent has become famous, the term "basic patent," is frequently encountered. The use of this term, says *Popular Mechanics*, is usually incorrect. A basic patent is one which protects the use of a principle, not a modification of a principle, and the principle must be indispensable to the accomplishment of the purpose contemplated. It follows that basic patents are simple. A very good illustration of this type of patent is that secured by the maker of a sanitary moisture-proof container.

Some time ago the government ruled against the use of animal glue in packages intended to contain food products, on account of the insanitary nature of the material. A practical inventor set to work to avoid this obstacle. For the body of the package a sheet of paper was saturated with paraffin and rolled into a cylinder. Paraffin has no adhesive power when warm and little when cold. Consequently the built-up cylinder would not keep together, but would spring open into a loose roll. After exhaustive experiments, a scheme was found which operated satisfactorily. Draw a tough thin piece of paper rapidly across a sharp knife blade so as to scrape, not cut. The strip of paper at once coils loosely. This is the basic principle. The sheet of paper to be formed into a package is drawn loosely over a sharp steel edge, then passed through a bath of paraffin, and then rolled to the required diameter. The tendency of the paper is to roll closer and not open up, and the top and bottom can be immediately inserted and the package shipped. This scraping process has been pronounced a basic principle by the authorities. The invention has opened up a new field for the wax and paper container, and is sanitary in every way. The package holds liquids indefinitely, and can be shipped with the same facility as the tin can and the glass bottle.

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Driving mechauism, Direct and reverse.. P. English
Dye, Azo....H. Freimann
Dye tub apparatus....W. M. Rossiter
Dyeing apparatus, Liquid....H. Eicken
Dyestuff of the tripenylmethane series and making same, Red acid...W. Emmerich
Egg box partitiou....C. T. Bloomer
Electric battery....W. Morrison
Electric device, Vapor....J. L. Hayden
Electric light socket cap....J. H. Goss
Electric machine, Dynamo....V. A. Fynn
Electric resistance....R. C. Harris
Electric trap....M. Cole
Electrical distribution system. W. H. Clarke
Electrodes, Binoxid of hydrogen. W. Morrison
Electrolytic meter....E. Weintraub
Electrotherapeutic apparatus. M. G. McElhinney
End gate....H. Hall
Engine brakes, Apparatus for retarding the release of....W. A. Peudry
Engine control....H. Hertzberg et al.
Engine for portable pneumatic reversible drilling machines....C. Schofield
Engine of self-propelled vehicles or boats. C. J. Moutgomery
Engine starting device, Gas...G. W. Sage
Engine tender, Traction....C. F. Maloney
Engraver's block....W. K. Wolfe
Envelop and similar machine..J. Froehlich
Envelop and similar machine, Trap door mechanism for....F. L. Schmidt
Evaporating solutions in which salt is precipitated....B. Block
Exercising apparatus....M. Duffner
Exhaust, Variable....W. J. Stevens
Expansion joint....C. R. Speight
Eyeglass mounting....I. Fox
Eyeglass nose guard....L. F. Adt
Fasteners, Machine for making corrugated saw-toothed metal....M. Fischer
Fastening inserting machine. L. A. Casgrain
Feed bag, Animal....H. R. Haskell
Feed water heater....T. E. Grahn
Feed water heating and purifying apparatus....F. M. Harmon
Fence machine, Wire....T. M. Conner
Fence, Snow....J. Rupp
Figure, Target....L. Linkiewicz
File....C. F. Adams
Filing appliance....H. J. Hick
Film feed device....C. C. Spinks
Film splicing device....G. L. Kline
Fire alarm and animal releasing device, Automatic....C. S. Cox
Fire and burglar alarm, Combined. J. M. Walker
Fire escape....J. R. Schwarz
Fire extinguishing stand pipe system. C. Brent
Fire pot....R. Rouse, Jr.
Flanging machine....H. McCabe
Flat iron, Automatic....A. S. Cubitt
Flue cleaner....E. Richards
Flue expander and beader....T. F. Grady
Fluid ejecting apparatus....H. Beddoes
Fluid pressure eugiue, pump, exhauster, or compressor....W. Reavell et al.
Flushing apparatus, Street..T. B. Jacksou
Flying machine....H. M. Benson
Fringe making machine..C. A. Muller et al.
Fruit cutter and pitter....J. P. Marsch
Gage, rule and square, Combined. E. Maupin
Gambrel....E. Lace
Game device....O. Weston
Garment marker....M. Jackson
Garment, Waist....H. J. Page
Gas engine....C. T. Wade
Gas generator, Acetylene....E. F. Kapus
Gas producer....A. Rusbatch
Gas tube tip....A. W. Nichols
Gearing....F. K. Hendrickson
Geariug, Differential....J. G. Heaslet
Glass ceiling construction. O. K. Simonsen et al.
Glass cylinders, Horse for..R. W. Bridge
Glove and mitten....L. L. Tabor
Gold, Riffle for amalgamation of. J. O. Kinney
Gold saving apparatus....T. Gilbert
Grader, Road....F. A. Mattson
Grinding machine....J. N. Heald
Grinding mill....G. and J. Holland-Letz
Guns, Transport carriage for. C. Schauwinhold
Hair drier, Electric....H. J. Mauger
Hammer, Spring....J. H. Phillips
Harness pad....H. Leibe
Harrow....J. S. Jones
Harrow....J. H. Glassburn et al.
Harrow....C. A. Monroe et al.
Harrow attachment, Disk. P. H. and J. Noonan
Harvester, Cotton....T. E. Willis et al.
Hearth, Warm air regulating. E. B. Lobach
Heating system....E. E. Gold
Heel and sole protector....H. B. Bornside
Heels and soles of boots and shoes, Protector for....S. F. Peck
Hide stretcher....T. R. McLean
Hides and the like, Process and product for use in unliming....G. Eberle
Hinge....A. Manderbach
Hinges and the like, Machine for assembling the parts of butt..H. Steller et al.
Hoe, Weediug....C. F. Adams
Hole digger....J. W. Foster
Horse detaching device..F. P. Gable et al.
Horse gag....C. Lau
Horseshoe nails, Making....A. Moller
Hose connection....C. D. Myer
Hydrocarbon power plant....A. Buchi
Hydrometallurgical solutions by means of an improved precipitant, Precipitating (2 pats)....C. W. Merrill
Ignition system....H. J. Podlesak
Incubator alarm actuating mechanism. W. M. Braly
Intermitteut coupliug, Automatic...C. Trog
Internal combustion pumping engine. C. Emmous
Ironing boards, Holder for cloth coverings of....C. E. Gray
Jewelry....A. Spaney et al
Journal bearing....J. Sturrock
Journal box....R. S. Brown
Kneading machine....C. Ambrette
Knitting machine yarn twisting attachment....W. H. West
Knockdown box....E. G. Kohout
Ladle, Built-up....C. P. Astrom
Ladle, Built up....M. H. Treadwell
Lamp, Acetylene....C. L. Betts
Lamp, Arc....J. W. Kendrick
Lamp attachment, Vapor....A. Dempster
Lamp haugers, Locking device for arc. C. W. Mansur
Lamp socket, Electric....F. E. Seeley
Latch, Automatic gate..W. R. Wallingford
Latch, Elevator door....C. M. Peelle
Lavatory fixture....E. G. Watrous
Lawn edge trimmer....C. Karass
Leveling and plumbing instrumeut. L. B. Worden
Life saving garment attachment. P. Catino
Lifting jack head....A. O. Slentz
Lighter, Automatic....E. Husson
Lights, Automatic cut-off for gasoline generated....A. L. Dennstedt
Liquor, Process and apparatus for electrolytic recovery of waste. F. F. Farnham
Litter carriers and the like, Swinging track and boom for....H. L. Ferris
Loadiug mechanism....P. Reinbold
Lock....B. W. Wolfe
Lock....J. Dunai
Lock switch....T. D. Robinson
Locomotive running gear, Electric. G. H. Downs
Locomotives, Driving means of electric.. G. H. Dowus
Loom attachment....V. H. Jenniugs
Loom, Rug or carpet....C. Bartlett
Loom shuttle, Automatically threading. I. Snow
Looms, Machine for straightening tube-frames for Axminster....T. P. Walsh
Magnetic drill, Portable....A. Casazza
Mail box....F. C. Meyer
Mail changing device for railways. W. M. Moloney
Mask, Eye bathing....J. D. Houston
Measuring and indicating apparatus. W. A. Frank
Meat block attachment....L. D. Frazier
Metal article, Rolled....F. N. Speller
Metal, Expanded....J. T. Simpson
Metal point....A. Lukaszewske
Metal, Making expanded...W. D. Forsyth
Metal mixers, Safety gate for. M. M. Suppes
Metal working, Apparatus for autogenous. W. Brandes
Metal working machine....M. Luudin
Microphone transmitter....A. A. Jahnke
Milk and milk products, Sterilizing. E. Wiener
Mirror aud cabinet, Combined. J. Y. Johnson et al.
Miter box....E. M. Ayer
Miter gage....C. H. Johnson
Molding machine....E. Ronceray
Mop wringer....E. E. Ward
Mortar or plaster, Manufacture of dry. E. Cramer
Motor Apparatus, Pneumatic....J. Vandin
Motor casiugs, Oil emptying mechanism for I. Koechlin
Motors, Automatic circuit controller for electric....S. Sparrow
Motors in series, Protection of high-tension direct current....T. von Zweigbergk
Mower, Lawn....A. G. Tulane
Muffler....C. Red
Music holder and turner....M. D. Myers
Music leaf turner....A. K. L. Black
Musical instruments, Automatic player for. N. G. Meade
Musical instrumeuts, Cabinet for automatic....R. J. Bennett
Musical instruments, Regulator for pneumatically operated....T. Danquard
Musical instruments, Sliding panel for. T. P. Brown
Nitrogen compounds from carbids, Producing....A. R. Frank
Nut lock....H. S. Delamere
Obstetrical forceps....C. C. Young
Oil burner....J. E. Kresky
Oil can....B. F. Du Pont et al.
Oil, Solidified....C. Ellis
Oil vaporizer and burner, Crude. J. G. Clark
Opthalmometer....F. Buchhop
Orc concentrating and separating apparatus, Mechauical movement for..F. Dallemagne
Ore separator, Magnetic..J. B. Etherington
Oscillating motor....J. G. McDowell
Package, Bilked metallic....B. Osland
Packing pads, Machine for making. C. A. Anderson
Pail attachment....A. N. Barrett
Paper box manufacturing machine. B. H. Smith
Paper cup, Waterproof. E. E. Claussen et al.
Paper folding machine....W. H. Cook
Paper shot shell....R. G. Clyne
Pelt stretching frame....L. L. Lewis
Perambulator or go-cart, Folding. A. E. McGill
Photographic plate rack....I. K. King
Pile fabric, Warp....H. Dawson
Pillow holder....E. B. Hattler
Pins, Forming joint members for. S. Fisher
Pincapples or the like, Machine for treating....L. E. Arnold
Pipe....E. Dannenberg
Pipe coupling, Flexible...W. A. Crammond
Pipe joint clamping device....R. S. Lord
Pipe wrench....J. E. James
Plane, Revolving....J. Hayton
Planter, Seed....A. Sheetz
Plastic tie....D. K. McDaniel
Plates, sheets, and the like, Cooling apparatus for....G. W. Bickerton
Plow moldboard....A. Beange
Plow point holder....D. D. Conley
Pneumatic or vacuum cleaner. T. B. Downey
Pocket hanger....L. P. Wright
Pocket holder....M. J. Hurley
Pool and billiard table leveler. J. J. Moore et al.
Post bracket....C. J. S. Schnaus
Potato digger....C. W. Ford
Poultry fountain....H. Yung
Power apparatus....J. C. Gates
Press....F. Ashworth
Press roll....S. E. Warren
Presses, Bed motion for two revolution flat bed....M. A. Droitcour
Priuting machine....G. V. Fulk
Printing machine....O. Roesen
Printing machine, Hand....A. Svoboda
Printing mechanism....H. C. Gammeter
Printing press....G. Lidseen
Printing press, Rotary....G. E. Pancoast
Propulsion, Marine..C. A. Parsons et al.
Pulley, Split....C. S. Davis
Pulling-over machine (2 pats)....A. Bates

Pulverizer, Hay.....W. W. Lockwood
Pulverizer, Soil.....J. B. Hill
Pump.....K. F. Gerhard
Pump, Rotary.....J. R. Kinney
Pump shelf.....T. R. Barnes
Pump valve.....R. A. Lyons
Punching, shearing and bar cutting machine, Combined.....H. B. Kraut
Puzzle.....A. K. Rankin
Rail heating and discharging method and Apparatus.....W. H. Morgan
Rail joint and chair.....D. W. Cameron
Rail joint, Insulated...E. F. Schermerhorn
Rail splice.....G. E. Thackray
Rail splice.....S. Belanger
Railway crossing.....I. L. Earnheart
Railway rail fastener.....L. H. Des Isles
Railway signal.....A. H. Bernadou
Railway switch.....E. D. Brown
Railway switch.....J. Funderburg
Railway tie.....C. W. Smith
Railway tie, Metallic.....J. N. Kemmerer
Railway tie, Metallic.....H. C. Tinnin
Railway ties, Detachable rail cushion and fastening for.....C. W. Smith et al.
Railway track curve.....J. W. McManama
Rat trap, Electric.....K. Stefan
Razor, Safety.....P. H. Unsinger
Razor stropping device, Safety.....O. Kampfe
Receptacle, Fluid.....E. F. Shailor et al.
Refrigerating device.....W. R. Gardner
Relay.....A. L. Townsend
Reverse friction strap.....J. M. Kroyer
Rheostat for electric motors.....J. T. Kalweit et al.
Ribbon press.....J. E. McClellan
Rock drill.....M. A. Knapp
Rocking chair.....M. Lutenberger
Rod catcher.....J. H. Belser
Roll turning device.....C. F. Nystrom
Rolliug steel.....F. N. Speller
Roof clip.....W. P. Murphy
Roofing bracket.....G. B. Kefover
Rotary drier.....F. B. Giesler
Rotary engine.....J. B. Groh
Rotary engine.....B. F. Augustine
Rotary motor.....J. Mackey
Rowing apparatus.....F. Kaselowsky
Rubber straining machines, Head for.....J. W. Weir
Sad iron.....W. F. Blake
Sash balance, Window..H. E. Franks et al.
Saw.....C. F. Jacobs
Saw blade, Circular (Reissue).....G. N. Williams, Jr., et al.
Saw cleaner, Gin.....H. J. Fitzpatrick
Scale, Weighing.....W. C. Carr
Scales, Paper holder for.....L. E. Zimmerman
Seal. All flexible rubber sink..E. A. Stears
Seat attachment, Spring.....F. C. Hoffer
Seat cover.....I. M. Curtis
Seed and fertilizer drill.....P. M. Metzler
Seed cotton cleaner.....M. I. Flowers
Sewing machine.....G. P. Comey
Sewing machine, Buttonhole..H. C. Miller
Sewing machine, Sack holder for sack.....G. E. and E. D. Scott
Shaft, Combined cranking and power.....R. Hatteu
Sharpener, Saw.....A. Strickland
Sharpener, Skate.....F. C. Haynes
Sharpener device, Plow.....J. W. Wilhite
Sheet metal, Treating.....G. Russell
Shock absorber.....W. A. Schiller
Shock absorber.....E. Prouty
Shoes, Apparatus for making....E. Bayard
Shoes, Machine for operating on.....F. B. Keall et al.
Shrapnel with grenade charge, Bursting.....C. Puff
Sign.....J. J. Jones
Sign.....J. Hotchner
Signs, Device for directing the attention to advertising.....Z. T. Merrill
Skate wheel.....T. E. King
Skinning tool.....S. M. Moen
Skip, Self discharging.....A. Gibb et al.
Skirt, Maternity.....W. O. Schumacker
Soldering tool.....L. L. Funk
Sound reproducing machines, Automatic cut-off and stop for...W. G. Altenburgh
Spark gap.....J. D. Robertsou
Speed changing mechanism for motor cars.....A. H. Adams et al.
Spindle lock.....L. S. Starrett
Spindle lubricator, Inertia..J. M. Cameron
Spool holder.....C. E. Talmon
Spring wheel.....R. C. Jarvis
Sprinkler alarm apparatus.....J. R. Hamilton
Spur.....J. Ptaschinski
Stacker, Hay.....J. Howard
Stair gage.....W. H. Wiegman
Stalk cutter.....E. B. Buehler
Stamping machine, Can.....J. F. White
Stay, Corset.....H. M. McCormick
Stay, Corset.....S. Weber-McCormick
Steam condensing plant working under vacuum.....D. B. Morison
Steam power plant and the like..A. E. Guy
Steam trap.....F. C. Farnsworth
Step extension.....W. Gossett
Stool, Milk.....L. Tyreman
Stove and furnace fire pot.....W. Clerkin
Street indicator.....W. A. Louth
Street sweeper.....W. Wefer
Surface defects, Removing...F. N. Speller
Swaging machine.....G. H. Day
Swing, Folding.....W. H. Mockabee
Switch throwing device.....E. R. Loebner
Tablet.....S. I. Atwater
Tack pulling machine.....J. B. Hadaway
Tank.....L. Lindenberg
Tannin extracts, Decolorizing.....J. Paessler et al.
Tea and coffee pot.....A. H. Spitzig
Telegraphy, Space.....G. S. Piggott
Telephone receiver.....W. W. Dean
Telephone receivers, Device for holding.....E. L. Persons
Telephone system.....A. D. T. Libby
Telephone system. Central energy.....C. S. Winston
Telephone transmitter.....A. A. Jahnke
Telephony, Space (2 pats)..L. De Forest
Telescope, Sighting.....R. Straubel
Test indicator.....E. M. Erb
Thill support.....S. B. Hays
Thread cutting tool (2 pats.).....R. B. Tewksbury
Tie plate.....B. P. Bloodworth
Tie plate.....F. S. James
Tie plate, brace, and guard rail, Combined.....R. W. Edwards
Tile machine former head.....J. H. Stewart et al.
Tire.....T. J. Thatcher
Tire cover, Pneumatic.....R. Latour
Tire, Cushion.....G. H. Matteson
Tire protector.....R. Aue
Tire, Vehicle.....H. Wilson, et al.
Tobacco barn implement.....E. S. Clark
Tobacco pipe.....E. Gilbert
Towel rack.....O. A. Boehm
Toy.....T. D. Floto
Toy.....T. Sekikawa
Toys and grabber.....J. A. Wallace, et al.
Track laying apparatus.....C. Leon
Train line coupling.....J. B. Genin
Transmission mechanism.....C. R. Minor
Tricycle.....W. W. Annable
Trolley signals, Circuit closer for.....W. M. Chapman
Truck.....W. G. Winans
Truck.....W. C. Smith
Truck, Car.....H. C. Hodges
Truck frame.....A. L. Hastings
Tubes, Machine for making spirally wound.....F. C. Osborn
Tungsten furnace.....A. Appelberg
Turbine, Elastic fluid.....W. L. R. Emmet
Turbine, Elastic fluid.....T. Bell
Turnbuckle, Elastic.....C. L. Keddy
Type writing machine....M. H. Lockwood
Umbrella.....L. C. Blair
Umbrella.....O. L. Carroll
Valve.....S. A. Kinsey, Jr.
Valve.....E. A. Kelsey
Valve and slip joint, Throttle.....J. H. Freeman
Valve, Engineer's.....W. A. Pendry
Valve, Float.....J. Rothchild et al.
Valve, Flush.....J. Lafrance
Valve gear, Liberating cut off..N. W. Twiss
Valve gear, Turbine.....H. J. Hanzlik
Valve mechanism for internal combustion engines.....A. P. Plaut
Valve, Radiator return.....S. D. Chapman
Valve, Rotary.....C. E. Mead
Valve, Self lubricating air.....C. Senn
Valve, Throttle.....D. S. Waugh
Valves, Valve cage for oscillating..T. Hall
Vapor device, Mercury.....E. Thomson
Vapor diffusing device..H. W. Forbes et al.
Vehicle seat aud lock therefor..W. Miller
Vehicle spring.....J. A. Perry
Vehicle wheel.....A. E. Beall et al.
Vehicle wheel.....C. E. Goss
Vehicle wheel and tire.....M. Clark
Vehicles, Combined steering and propelling means for.....R. Fautsch
Vending machine.....C. C. Clawson
Ventilator.....W. McDermott
Ventilator for buildings and chimney-tops.....T. H. Garland
Vibrator, Electrically operated..H. Z. Sands
Vibrator, Turbine.....R. Messlin
Vise, Bench.....H. L. Lightfoot et al.
Vise jaw attachment.....L. S. Starrett
Wagon, Boy's.....J. E. Yost
Washing machine gearing.....C. J. Marth
Watchcase.....H. W. Matalene
Water closet fixture.....T. F. Ward
Water gate.....W. S. Dougherty et al.
Water heater.....E. E. Graham
Water heater.....H. S. Humphrey
Water motor, Impact.....J. W. Branson
Weaving, Doup-heddle for leno.....A. E. Kelmel
Weighing machine, Automatic H. Richardson
Weighing machine, Milk.....G. R. Meloney et al.
Welding machine (2 pats).....G. E. Dean
Welding machine burner...A. E. Wilshusen
Well boring machines, Spudding device for.....G. P. Riggs
Wheel shifter, Automatic friction.....A. A. Lapointe
Winding reel.....J. Payet
Window and door fastener....F. C. Price
Window screen and fly trap, Combination.....T. H. Nace
Wiping and rubbing device.....W. H. Clark
Wire reel.....S. A. McCullough
Wire stretcher.....L. B. Kelley
Wood, Preserving hard.....A. F. Barry
Wool, Scouring or cleaning.....W. J. Croston
Wrench.....L. Rice
Yieldable wheel.....J. Klatt
Yoke, Neck.....C. P. Young
Zinc, Metallurgy of.....A. L. J. Queneau
Zinc ores and compounds, Metallurgy of...A. L. J. Queneau

Issued October 31, 1911.

MECHANICAL PATENTS.

Account register.....A. F. Staples
Account register.....F. F. Dorsey
Acid, Aminobenzoylaminobenzoyl 2 amino 5 naphthol 7 sulfonic (Reissue).....W. Neelmeier
Adding and registering device.....W. H. Goodin
Adding machine.....A. Wiberg
Advertising device.....J. H. Goodier
Aerodrome.....W. A. Hutson
Agitating machine.....C. F. McEwen
Agricultural implement.....W. H. Shank
Air brake.....N. A. Hill
Air compressor, Hydraulic....A. O. Girard
Airship, balloon, aeroplane, and the like.....R. Wagner et al.
Alloy, Steel.....W. Beardmore
Alumina, Making pure.....O. Serpek
Aluminium bronze.....P. H. G. Durville
Antislipping and cushioniug device.....C. E. Jewell
Armor plating.....O. Schaumanu
Ash sifting shovel.....G. Hollinshed
Ash sifting shovel.....C. F. Hoffman
Automatic switch.....J. L. Polk
Automatically opening die.....F. A. Errington
Automobile fender.....W. Snyder
Automobile running gear.....D. C. Cookingham et al.
Automobile starter.....S. J. Gill
Automobile suspensiou.....E. Schorr
Automobiles and other machinery, Cranking device for.....E. A. Feiring
Axle, Driving.....H. W. Alden
Axle jouruals, Machiue for turning car.....J. J. Acker
Bag or liner spreading device..W. A. Joplin
Bale carrier.....E. H. Boehme
Ball trap.....E. H. Walter
Ballot box.....J. W. Marsh
Banana cage.....G. Moscrip, Jr.
Bearing alarm, Hot.....R. L. Jobson
Bearing jewels, Mounting.....H. Miller
Bed, Disappearing.....W. L. Murphy
Beet blocker.....H. E. Bercot
Bell, Alarm.....E. Z. Smith
Belt guide.....W Ellis
Bib and cock.....J. H. Glauber
Bicycle support.....S. D. Chelf
Binder and leaf therefor, Loose leaf.....G. C. Moore
Binder, Loose leaf.....J. G. Magin
Bleach chamber.....C. W. Marsh
Blowpipe or torch.....A. C. McGee
Boat, Motor.....C. E. Loetzer
Boats, Escape device for submarine.....J. Schnitter
Bobbin and spindle connector.....J. Roney et al.
Boiler.....J. G. Briegel
Boiler furnace, Steam.....E. E. Carr
Boiler safety device, Steam.....J. J. Barry et al.
Boiler tube cutter.....J. L. Browder
Bolt blanks, Turning and threading.....C. K. Lassiter
Book, Account.....S. Fred
Book holder.....E. W. Farris
Boots and shoes, Machine for the manufacture of.....A. L. Engberg
Bottle cap remover.....A. W. Stephens
Bottle closure.....S. E. Bell
Bowl or container, Sugar..R. C. Jackson
Box edges, Machine for trimming metal..J. Heine
Box making machine.....G. D. Parker
Brake equalizer.....H. L. Blunck
Brake slack adjuster.....L. D. McElroy
Bridge.....J. A. Lynch
Bridge safety gate.....C. Faust
Broiler.....L. F. Betts
Brooder.....J. B. Coykendall
Brush.....J. J. Brandstetter
Brush, Fountain.....P. B. Ruch
Brush, Tooth.....J. Gaynor
Bucket, Clam shell (2 pats.).....C. J. McMyler
Buffing hood.....W. E. Crease
Bull wheel, tug wheel, and mountiug reel therefor, Combined.....T. A. Beecher
Butter cutting machine.....R. O. Hughes
Butter cutting machine.....P. N. Oien
Cable carrier.....J. Davis
Calculating machine.....E. J. Brasseur
Calculating machine.....W. P. Quentell
Calculating machine...W. P. Quentell et al.
Calculating machine.....F. Trinks
Calf wheel reel.....T. A. Beecher
Calipers.....W. Speer
Camera, Photographic magazine.....R. Goldstein
Can covering strips, Machine for securing.....E. Jagenberg
Can cutter.....G. C. Percy
Can opener.....H. A. Hunter
Can opener.....J. H. Buckley
Car and other vehicle fender.....J. A. Wiedersheim
Car brake, Load equalizing.....J. R. Stiegelmeyer
Car, Dump.....D. E. Blair
Car fender.....J. Silver et al.
Car, Railway dining.....J. Cohran
Car replacer.....F. S. Leonard et al.
Car, Tilting side dump.....C. H. Clark
Cars, Life guard or fender for railway...G. A. Parmenter
Cards, Playing.....S. C. Legh
Carbureter.....M. B. Rice
Carpet beater.....A. F. Mewis
Carton.....G. A. Robinson
Castings, Means for eliminating risers on.....R. P. Lamont
Chain, Friction driving.....H. K. Holsman
Change maker.....E. A. Wickline
Chisel and gage, Butt.....D. B. Rounds
Chuck.....W. L. Miller
Churn.....W. B. Woodruff
Chute.....C. S. Farrer
Cigar ease.....J. McGarrity
Cigarette container.....R. V. Kazian
Classifier.....C. Hoyle et al.
Climbing apparatus.....H. E. Hersh
Clip fastener, Double wire netting.....E. B. Hardie
Cloth pressiug machine.....T. D. Palmer
Cloth sample holder.....G. H. Tegmeier
Clothes basket and drainer.....P. Weens
Clutch.....B. H. Penn
Clutch.....E. H. Carroll
Clutch, Friction.....R. Pinder
Coffee beans, Machine for treating.....M. Gerster et al.
Coffee machine.....G. Hessdorfer
Coin receptacle.....M. W. Kirkland
Coke quenching device.....L. C. Flaccus
Coke, Treating.....H. Spurrier
Cold dispensing can.....B. Brazelle
Collapsible handle can...E. G. Canepa et al.
Collar protecting device.....S. L. Simpson
Collar cap clamp and pad guard, Horse.....P. J. Carr
Commutator for dynamo electric machines.....P. S. Mellin
Computing machine.....C. A. Joerissen
Concentrates, Apparatus for collecting (2 pats.).....W. F. Dister
Concrete conduits, Form for molding reinforced.....G. W. Cross
Concrete floor and ceiling, Reinforced.....G. M. Graham
Concrete flooring construction.....J. G. Zwicker
Concrete flooring member mold.....J. G. Zwicker
Concrete structures, Fitting for reinforced.....G. M. Graham
Concrete structures, Reinforcing frame for.....G. M. Graham
Concrete walls, subways, &c., in the earth, Constructing.....G. W. Jackson
Condenser, Fume.....A. J. Hopper et al.
Contact mass, Making a....J. W. Beckman
Container holder.....W. B. Williams
Containers of fibrous material, Treating.....C. M. Gage
Core, Collapsible.....T. W. Baker
Core, Collapsible.....A. Adamson
Corn husker.....G. A. Benz
Corn testiug apparatus, Seed.....M. T. Bascom
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Issued November 7, 1911.

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Cartridge cut-out, Explosion proof.....W. Klement
Chandelier.....C. A. Luther
Chilian mill.....A. J. McCone
Chuck.....E. C. Peck
Chuck, Collet.....C. T. Kadow
Churn.....G. T. Cochran
Cigarette machine.....F. Kettmann
Cigarette paper perforating machine.....C. A. Drucklieb
Clarinet.....D. Julliot
Cloth, Licker-in.....L. Stocker
Cloth pressing machine....A. Baldwin, Sr.
Clothes line support.....C. Connolley
Clothes wringer (3 pats.)..G. A. Paddock
Clntch.....E. T. Robinson
Clutch and shifting mechanism therefor...E. T. Robinson
Coal storing apparatus.....J. M. Snead
Cocks and electric light switches, Apparatus for controlling gas.....B. Scheidemann
Coffee machine.....C. Nelson
Coil, Reactance.....W. O. Jacobi et al.
Coin holder or change maker...J. W. Jones
Coking fnrnace and conveyer therefor (Reissue).....L. L. Summers
Commutator short circniting device.....C. S. Reno
Commntator short circniting device.....L. H. Thnllen
Compasses or dividers.....C. E. Hand
Composing machine, Typographical.....H. Pearce et al.
Concrete column, Reinforced..T. H. Skinner
Concrete mold.....P. W. Hill
Concrete structure, Reinforced.....T. H. Skinner
Container.....G. A. Humphrey
Cooker, Steam.....R. E. White
Cooking apparatns.....W. S. Irey
Coop, Chicken.....G. E. Maurer
Coop, Collapsible poultry.....D. F. Williams et al.
Core lifting device.....G. Atterbury
Corn shellers, Feeder for..J. and E. S. Legris
Corrugating press.....H. Paul
Cotton picker.....B. C. White
Cotton picker finger.....B. C. White
Crnsher.....J. P. Fox
Cultivators, Extension plow attachment for.....E. Alders
Curtain roller.....E. E. Whitmore
Cutting machine.....F. Meyer
Decanting apparatus.....M. R. Lamb
Dental pliers for holding teeth.....J. W. Trosper
Derrick.....E. Erevick
Desk safety device, Cash...W. Eichelkraut
Die holder.....J. W. Clark
Dipping apparatus.....E. Herisse
Dish rinsing and drying rack C. H. Dudley
Display apparatns.....W. L. Thorne
Display cabinet door.....J. Hoffman et al.
Display rack, Wall paper...C. D. Edwards
Display stand.....W. E. Ragsdale
Displaying carpets and the like, Machine for.....T. C. De Lisle et al.
Distillation process.....F. Pampe
Distillation system.....J. M. W. Kitchen
Ditching machine.....N. F. Chamberlin
Dividers, Folding pocket.....M. E. Smith
Doll.....A. Cohen
Door catch, screen.....R. G. Winter
Door lock.....W. Gerwien
Doors, Mounting for sliding.....A. Voigt
Dough brake.....I. Raskin et al.
Dongh molding apparatus..G. S. Baker et al.
Draft preventer.....E. A. Schultz
Drafting instrument.....W. C. Van Gilder
Drying and conveying system, Combined...A. Gnadt
Drying rack.....N. Zuck
Drill gage.....O. J. Fairchild
Drill press gearing.....R. Milne
Drilling machine, Portable pneumatic reversible.....C. Schofield
Drinking cup.....H. H. Chambers
Drop guide and operating mechanism therefor.....C. Van Middlesworth
Dnst collector.....F. J. Matchette
Dyeing machine, Skein.....W. H. Fletcher
Electric accumulator ignition gear, Distribnter for.....F. R. Simms
Electric brake for electric motors.....M. Kallmann
Electric light fitting.....F. Storsberg
Electric regulation (3 pats.).....J. L. Creveling
Electrode, Carbon.....M. W. Allen
Electrode for flaming arc lamps..C. W. Hill
Electrolytic apparatus..G. O. Seward et al.
Elevator safety device.....S. F. Glimm
Ellipsograph machine.....F. J. Baker
Embalming tube.....J. C. Flagg
Embossing press.....E. R. Collins
Engine attachment, Internal combustion...A. Iber
Engine heating system, Explosion.....S. J. Lukaszewski
Engine igniter, Internal combustion.....C. Messerschmid
Engine starting mechanism, Hydrocarbon.....W. L. McKissick
Engines, Igniting of the charges in internal combustion.....R. E. Phillips
Explosion engine operated by liquid fuel..O. L. Riegels
Explosive engine.....E. H. Belknap et al.
Eyeglasses.....O. B. Carson et al.
Eyelet setting machine.....W. Hughes
Faucets, Buffer for beer.....P. F. W. Zabel et al.
Feed bag and holder.....J. Q. Adams
Fence machine, Wire.....W. J. Vail
Fence post, Portable.....C. G. Welsz
Fertilizer distributer.....H. Synck
Fertilizer distributer.....J. M. Sanders
File binder.....T. E. Heeter
File for holding individual accounts, Loose leaf.....E. L. Mooney
Filling and weighing apparatus.....H. F. Broadhurst
Filtering apparatus.....M. Deacon et al.
Firearm.....E. B. Leggett et al.
Firearm, Automatic.....N. Bjorgum
Firearms, Drum magazine for....K. Krnka
Floor and bench scraper, Combined.....G. J. Engert et al.
Floor covering, Waterproof.....J. Smith
Fluid transmitter, Rotary.....P. English
Fly trap.....G. Depner
Flying machine.....A. O. Gardiner
Freight in storage buildings, Means for handling.....E. W. Taylor
Frog trap.....R. E. White
Furnace charging device.....J., Sr., J., Jr., J. and A. Gmeindl
Furniture construction, Metal.....A. H. Schaffert
Furniture, Convertible.....J. L. Tandy
Gage attachment, Water.....F. L. Jobson
Game counter.....W. P. Flanagan
Game device, Ball.....R. Sato
Gas apparatus, Producer..J. M. W. Kitchen
Gas engine.....R. S. Moore
Gas engine.....P. B. O'Connell
Gas generator, Acetylene..J. O. Angermeier
Gas generator, Acetylene.....C. A. Nickles
Gas lighter, Acetylene..H. Van Hoevenberg
Gas producer.....E. Rathbun
Gearing.....H. H. Holden
Gearing.....C. J. Marth
Gearing, Change speed and reversing.....W. J. Vincent
Gin.....W. E. Cooke
Glove, Rubber swimming.....J. W. Copeland et al.
Glue spreader.....N. C. Phillips
Gold, Recovering fine (Reissue).....J. H. Alling
Governor, Engine.....B. M. Aslakson
Grain drills, Double disk bearing for the furrow openers of.....C. W. Robinson
Grate, Adjustable fireplace..J. M. Massey
Gun firing mechanism..J. F. Meigs et al.
Gun firing mechanism.....L. W. Taylor
Guns, Breech-piece for.....K. Voller
Guns, Indicating and recording the aiming of (Reissue).....N. Pogolski
Hall tree.....C. A. Anderson
Hammers, Attachment for power operated.....C. W. Gilman et al.
Harrow.....J. P. Harper
Harrow.....E. M. Heylman
Harrow, Disk.....C. S. Sharp
Harvester grain divider....H. J. Podlesak
Hatch cover fastener.....H. N. Herriman
Hay knife.....G. A. Swineford
Hay press.....E. P. Denmon et al.
Hay presses, Tally keeper for....C. Gobell
Hay rake.....J. Dain
Headlight, Dirigible.....J. L. Lowe
Heating system.....A. G. Paul
Heating system, Trapped.....E. E. Gold
Heel.....J. E. Glidden
Hens from setting, Device for preventing.....V. M. Osborn
Hinge, Door.....L. Aspy
Hinge for wind shields, Friction.....P. N. Landine
Hinge joint for artificial limbs and other purposes.....E. and E. E. Mueller
Horseshoe.....M. Goldberg
Horseshoe.....W. E. Spangler
Hose clamp and holder.....W. H. Gleeson
Hub, Vehicle.....J. T. Holly
Ice creeper.....C. A. Soderburg
Ink well.....L. J. Schafer et al.
Insect destroyer.....W. W. Garner et al.
Insect exterminator.....E. Prytz
Insect strap.....C. W. Fischer
Insole tacking jack.....W. F. De Silver
Insulating tubes, Machine for making.....E. W. Hoffe
Insulator.....J. M. Sweeney
Internal combustion engine..E. C. Newcomb
Ironing board attachment....F. H. Mayes
Journal box.....C. W. Sherman
Key ring.....C. Schumacher
Kinetoscope.....T. A. Nolan
Knitting machine.....T. F. Morris
Knot tying device.....J. P. O'Connell
Label holder.....W. R. Olin
Lamp, Arc.....K. Cosiolkofsky
Lamp, Automobile.....R. Jackson
Lamp, Candle.....C. E. Kail
Lamp cleaner, Electric.....E. E. Edgerton
Lamp controlling device for motor cars.....W. A. Greenlaw
Lamp for automobiles, Dirigible..S. Szekely
Lamp, Gas.....A. E. Gillinder
Lamp, Inverted arc gas.....F. W. Magee
Lamp socket.....H. J. Morey et al.
Lamp, Vehicle.....W. C. Marshall
Lard and the like, Machine for cutting.....U. S. Sjostrand et al.
Latch, Gate.....R. L. Tullis
Launder.....J. E. Hughes
Leaf turning device.....L. Valenza
Leather conveying mechanism.....C. M. Beadenkopf
Legging.....A. J. Brauer
Lightning arrester.....W. E. Butler
Limb, Artificial.....A. E. Gaines et al.
Line joint tester.....H. H. Simpson
Lithography.....O. Busse
Litter carrier.....F. G. Held
Loading mechanism.....G. Davis
Lock washer.....H. H. Smith
Locomotive coupling.....W. D. Tardif
Lubricating device, Automatic...A. Pribil
Lubricator.....J. E. Crandall
Lubricator.....J. L. Osgood
Magneto.....C. Cuno
Mail bag receiving and delivering apparatus.....P. B. Southworth
Manganese and calcium fluorid, Manufacturing metallic.....W. S. Rockey et al.
Manhole switch..S. B. Condit, Jr., et al.
Massage instrument.....D. Lee
Massage machine.....W. H. D. Spears
Match box case.....O. N. Hilton
Mathematical instrument.....A. Garinger
Matrix setting machine.....C. Muehleisen
Mattress, Wire.....T. Klipfel
Meat, Preserving.....O. L. Ahrens
Metal on celluloid, Mounting.....W. H. Gorman
Metal shape.....T. V. Buckwalter
Metals containing copper, Briqueting.....M. Glass
Microscope bridge and electromagnetic stage.....A. Sauveur
Milk can (2 pats.).....L. R. Steel
Milk, Preserving.....W. D. Pusey
Milking apparatus pulsating device.....E. E. Good
Mill.....E. V. Williams
Mixing machine.....W. F. Dehuff
Mixing machine beater.....H. Read
Mold forming machine.....C. E. Simpson
Molder's flask.....D. T. Turney
Mop.....H. G. Rowell
Motors, Safety starting crank for explosive.....C. R. Ellis
Mouthpiece.....E. E. Claussen
Music roll.....A. W. Jones
Musical instruments, Mechanism for regulating the expression in apparatus for playing.....E. Welte et al.
Neckties, Detachable retainer for.....H. E. Hess
Needle receptacle, Hypodermic.....G. R. Schimmel
Nest, Antomatic trap.....T. H. Lindsey
Nitrogen, Forming oxids of.....C. Ellis
Nut lock.....W. F. Kehoe
Nut lock.....G. W. Seago
Nut lock.....E. P. Davies
Nut lock.....I. C. Dakin
Nut lock.....H. T. Earles
Oil burner.....W. F. Pocock
Oil switch.....H. W. Cheney
Oil transporting means.....E. N. Mills
Ordnance (4 pats.).....W. D. Smith
Ore handling apparatus.....C. H. Wright
Ore reduction and smelting and arrangement therefor.....F. Tharaldsen
Overalls.....T. B. and J. C. Pell
Package.....W. L. Bretherton
Package, Shipping.....J. M. Hommel
Packing device for piston rods, slide valve rods, &c.....D. Robertson
Paper bag machine.....J. Froehlich
Paper feeding mechanism.....C. Van Middlesworth
Paper for wrapping or bundling purposes, Device for supporting and delivering, (Reissue).....R. H. Chase
Paper, Making.....P. Weston
Paper, &c., sizing composition....C. Ellis
Pastes, Drying edible.....E. M. Gegg
Paving blocks, Manufacture of compressed asphalt.....W. S. Wilkin et al.
Paving blocks, Manufacturing compressed asphalt.....G. E. Whitney
Pencil holder.....M. P. Hermann
Percolator.....J. R. Hoffer
Photograph printograph.....J. H. Banks
Piano.....A. A. Huseby
Piano foot rest, Adjustable...H. Schreiner
Piano player.....J. Carruthers
Piano string plate.....E. J. Knabe, Jr.
Picking mechanism, Pneumatic.....E. and W. Rhodes
Pile.....J. I. McGill
Piling, Metal.....J. I. McGill
Pin setting tool.....J. B. Derfinak
Pipe coupling.....J. P. Strickler
Pipe making machine.....W. A. Rees
Pipe tapping and plugging device.....D. A. Markley
Planter attachment.....C. W. Rabbit
Planting machine, Tree.....J. E. Rodman
Pliers.....A. E. Menzel
Plow frame.....W. G. Danielsen
Plow stock.....W. F. Hester
Plug for volatile containers, Igniting.....S. S. Weil
Plng or valve, Wash-out.....W. Wafer
Pneumatic spoke wheel.....A. H. Thibault
Port attachment, Pre-exhaust..B. W. King
Portable house.....J. D. Horton
Post card.....R. I. Prichard
Power driven machines, Reversing mechanism for.....C. Fredrickson
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Precipitates in settling vessels, Compression of.....F. Tiemann
Prepayment meter.....F. J. Beaumont
Press.....F. Orton
Printing machine (2 pats).....W. Scott
Printing machine ink distributing mechanism.....H. B. Cooley
Printing plates, Making.....T. S. Fox
Printing press delivery mechanism.....H. B. Cooley
Printing press ribbon operating device.....H. C. Hansen
Printing presses, Type chase and form cylinder for.....H. B. Cooley
Printing slngs, Machine for producing.....J. McNamara
Projection apparatns.....E. W. Goodrich
Pulling-over machine.....C. Ashton
Pulverizer.....J. E. and H. H. Blake
Pump, Bilge.....G. E. Badger
Pump, Diaphragm.....L. C. McNeal
Pump for machine tools and other purposes, Rotary.....J. Smith
Pumps, Means for driving air and gas.....B. M. Aslakson
Rail anchor.....P. W. Moore
Rail connection.....G. A. Morris
Rail fastener, Adjustable.....J. B. Pope
Rail joint.....J. A. Kimball
Rail joint.....W. M. Sample
Rail joint.....E. F. Miller
Rail joint.....A. F. Hall
Rail joint, Rolled step.....B. G. Braine
Railway coupling.....W. J. Price
Railway rail fastening.....S. E. Moore
Railway tie.....G. T. Appleyard et al.
Razor.....T. C. Sheehan
Razor, Safety.....A. A. Carlson
Receptacle ventilator...G. J. Fellman et al.
Recording instruments, Stylus for graphic.....H. W. Young
Refrigerator.....W. R. Jennison
Releasing hook.....R. A. Gaertner
Rerailing frog.....J. L. Nicolai
Resilient wheel.....A. D. Wack
Rheostat.....G. H. Whittingham
Rivet holder.....H. C. Thompson
Rod suspender.....G. V. Turgeon
Rolling mill, Tube.....T. Curr, Jr.
Room lock, Communicating..H. G. Voight
Rotary engine.....A. E. Greene
Rotary engine, Compound.....G. C. Hale
Ruling machine.....E. Weingartner
Sack filling and weighing machine, Automatic.....E. D. Carter
Sash, Automatic weatherproof..G. L. Body
Sash governing appliance..E. R. Leonard
Sash operating device.....J. E. Jones
Saw set.....C. Holtin
Scale, Weighing.....A. De Vilbiss, Jr.
Scissors or shears.....R. L. Allison
Screw driver.....G. O. Leopold
Screw puncher.....J. Kuhu
Screws, Anchor socket for.....I. D. Stine
Seal, Freight car.....C. D. Hall, Sr.
Seat.....A. Gertenbach
Separator.....L. Meyer
Sewing machine binding attachment.....M. B. Gardner
Sewing machine, Shoe.....G. E. Warren
Sewing the heads of mantles, Machine for.....S. Cohn
Shade holder.....F. E. Seeley et al.
Sharpeners, Feeding attachment for disk.....J. I. Depew
Sharpening machine, Cutlery..J. W. Hunter
Ship cleaner.....W. Gottlieb
Ship log apparatus, Electrical.....T. F. and T. S. Walker
Ships, Constructiou of.....A. C. Caines
Shock loader.....G. H. Tarvin
Shovel buckets and similar receptacles, Means for operating.....J. P. Dowd
Sifter.....I. M. Newell
Sign, Electric.....C. Hammesfahr
Signal device.....A. J. Thelen
Signaling system, Automatic.....D. J. McCarthy
Simmering burner.....W. N. Goldhamer
Skate, Roller.....H. Nannenhorn
Skirt and skirt attachment...J. A. Herman
Skirt marker.....C. M. B. Tiller
Slag, Granulating.....A. Seghers
Slicing machine.....W. M. Knowles
Slicing machines, Meat support for meat.....W. A. Van Berkel
Smoke and spark destroyer....A. Lawrence
Smoke consuming furnace.....T. B. Hulse

Soap powder, Making.....C. Ellis
Sole flexing machine.....F. E. Hooper
Soles, Machine for operating npon.....F. M. Fnrber
Sower, Grass seed.....M. V. Kinne
Spark plng.....C. H. Smith
Spark plug.....W. H. Tidmarsh
Speed changing mechanism (2 pats.).....A. R. McCausland
Speed changing mechanism..B. D. Northrup
Speed mechanism, Change.....R. Milne
Speed reversing mechanism.....A. R. McCausland
Spinning machine attachment.....H. S. Hawley et al.
Spinning or twisting machines, Separating means for.....A. E. Rhoades
Spray and making same, Agrieultural.....C. Ellis
Sprayer, Paint.....F. W. Ballard
Spring motor.....W. P. Hansen
Sprinkling apparatus.....N. Bacigalupi
Square, Knockdown carpenter's.....A. A. Harvie
Squares and the like, Hardening carpenters'.....A. A. Harvie
Staging.....A. H. Botsford
Stalk cutter.....A. W. Buchanan
Stamp, Time.....C. E. Clarke
Starch shovel.....C. F. Black
Starch, Steeping grain in the manufacture of.....F. L. Jeffries
Starch, Washing and concentrating.....F. L. Jeffries
Starch washing, separating and concentrating apparatus.....F. L. Jeffries
Station indicator.....C. G. Rehg
Steam or hot water circnlating apparatus.....J. Rouquaud
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Steeping apparatus.....F. L. Jeffries
Stitch separating mechanism..F. W. Merrick
Store front setting.....M. S. Crane
Stove or range, Cook.....C. M. Genthner
Stove regulator, Gas.....F. W. Magee
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Sunshade.....R. F. Bickerton
Swimming device.....E. G. Halvorsen
Switch.....B. Haskins
Switch box.....C. N. Sachs
Switch mechanism, Electric.....H. F. Whalton
Switch stand.....F. C. Anderson
Switching device, Electromechanical.....R. R. Miller
Syringe, Subcutaneous.....A. Schroeder
Table for application to chairs.....R. C. Johnson
Table top, Auxiliary.....O. F. Onken
Tabulator stop setting device.....W. E. Palmer
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Tank or container.....J. F. Webb
Teeth, Removable bridge for.....H. A. Gollobin et al.
Telephone casing.....W. W. Dean
Telephone ringing device.....H. N. Faris
Telephone signaling system, Selective.....C. H. North
Telephone system, Party line.....E. Stout et al.
Telephone transmitter.....C. T. Mason
Telephone trunking system..C. S. Winston
Tension device.....J. O. McKean
Tension device, Automatic....L. L. Almond
Tentering machine feed table..B. Parkinson
Theatrical apparatus.....M. E. Moore
Thermostat ventilator.....E. E. Gold
Ticket holder, Transfer.....F. B. Gordon
Timber and the like, Tool for hauling.....M. F. Bugge
Tire.....J. B. Price
Tire.....R. E. Olds
Tire, Automobile.....D. L. Gates
Tire protector.....D. N. Jones
Tire, Resilient (2 pats.)....C. W. Blake
Tire, Wheel.....D. Ronconi
Tool, Hand.....J. F. Joy
Tool holder.....A. T. Duncan
Transformer system.....H. C. Caldwell
Transmission mechanism...O. Rash et al.
Transplanter, Hand.....J. W. Thompson
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Truck construction for electric railway signal systems, Car.....G. B. Gray
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Trncks, Suspension of railway and tramway vehicle.....J. E. Anger
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Turnstile, Self checking registering.....E. W. Davis
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Union suit, Skirted.....E. I. Webb
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Valve.....J. J. Winnow
Valve, Air.....F. W. Leuthesser
Valve, Gas regulating.....A. G. Baker
Valve gear.....J. Davidson
Valve mechanism.....H. S. Humphrey
Vapor converter.....P. C. Hewitt
Vegetable or meat press.....A. E. Yaeger
Vehiele, Motor propelled and other.....N. H. Sooy
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Vehicle shock absorber..J. B. Burroughs
Vehicle wheel.....J. H. Phillips
Vehicle wheel.....A. B. Simpson
Vehicle wheel and tire.....M. Clark
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Vending machine, Check controlled postage stamp.....C. Simon
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Veneer drier.....E. F. Smith
Veneering.....P. Reckow
Vessel, Fluid jet propelled....P. G. Somers
Veterinary instrument.....O. Crittenden
Vise, Pipe.....J. L. Lanter
Wagon, Dumping.....H. S. Long
Wall grip.....E. Whitney
Washing machine driving mechanism.....P. W. Peters
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Water closet bowl.....E. J. Bloom
Water closet controlling apparatus.....J. F. Mason
Water closet seat.....M. H. Paulus
Water elevator, Compressed air.....G. S. Lane
Water heater.....R. L. Templin
Water heater.....B. A. Shroder
Water motor.....J. Gonzalez
Water under varying pressure, Device for maintaining a uniform delivery of.....P. A. Mahoney
Well sinking apparatus.....G. R. Moore
Wheel cutting machine.....T. Greenwood
Winches, Gearing for.....D. Wilson
Wind shield.....F. A. Dinningham
Window frame, Metal.....J. T. Leonard
Wire splicing machine.....R. H. Austin
Wire wiping machine.....W. C. Miller
Wood, Preserving.....K. Koenman
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Issued November 14, 1911.

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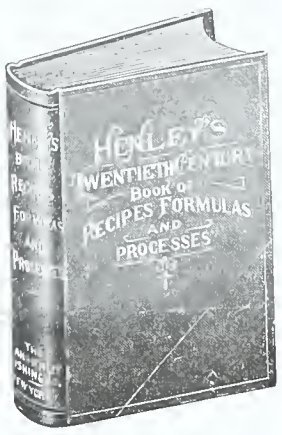
Abradant attachment.....G. O. Beasley
Account register.....A. F. Staples
Acid, Concentrating nitric.....E. Brauer
Acids or their glycerids with hydrogen, Saturating fatty.....E. C. Kayser
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Aeroplane wing.....H. W. Du Puy
Air compressor.....H. E. Barr
Air compressor, Wave actuated.....E. A. Wall
Air or other gas capable of supporting combustion, Means for increasing energy of stored compressed..W. H. Sodeau
Airship.....A. De Baiza
Airship, Dirigible.....E. Seelig
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Amusement device.....W. R. Bailey
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Antiskidding device for automobiles.....R. A. Moore
Automatic screen.....W. M. Thompson
Automobile top attachment..J. C. Munday
Automobiles and other vehicles, Door for.....F. England
Automobiles, Variable friction driving mechanism for.....J. K. De Loach
Axle.....P. M. Fink
Axle, Vehicle.....J. T. Tennison
Back brace.....H. C. Thornton
Bag holder.....C. McCormick
Baker's shovel.....J. G. Splittorf
Balanciug and steering apparatus.....L. Bleroit
Bale tie.....W. E. Moreland
Balloons, Propeller for dirigible..A. Gross
Barrel head releasing implement.....S. L. A. Killion
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Bedsteads, Short rail for.....P. Gobrecht
Bellows pumps, Operating mechanism for.....C. J. Harvey
Belt, Apparel.....W. A. Simmons
Bending machine.....C. E. Anderson
Berry boxes, Automatic machine for making foldable or collapsible.....O. C. Fenlason
Binder, Loose leaf.....E. H. Elder
Binder, Loose leaf.....A. C. Freese
Binding and tying mechanism.....N. W. Young
Biplanes, Balaneing device for lifting.....F. E. Borkenhagen
Bit.....F. A. Pica
Block signal system, Electrie..W. J. Bell
Blowing engine or compressor (2 pats.)..G. B. Petsche
Blue print washing machine.....J. W. Upp et al.
Boiler construction and means for making same.....C. A. Brown
Book construction, Loose leaf..E. W. Hill
Book mark.....J. W. Lones
Bottle case.....F. Distler
Bottle holder.....E. F. Farley
Bottle, Non refillable.....C. Gorgensen
Bottle, Poison.....O. M. Kelso
Bottle, Safety medicine.....N. Illoway
Braiding machine.....S. W. Wardwell
Brakes, Means for applying vehicle.....J. H. Davis
Briek, Burning.....J. H. Baeh
Bridle, Bitless guiding.....D. R. Porter
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Cabinet, Portable bath.....G. G. Cox
Cabinet, Record.....W. Hill
Cabinet, Spool.....W. H. Osmer
Cable fastener.....L. A. Young
Calcium cynamid, Making.....K. Schick
Calendar pad support.....J. R. Wilson
Camera focusing attachment.....C. Levey
Can closure.....A. F. Smith
Can opener.....E. Walther
Cap.....J. Miller
Car brake, Railway.....L. De Vito
Car cooling device.....J. D. Cunningham
Car coupling.....J. A. Sterner
Car door.....P. M. Beard
Car door, Grain.....J. C. Dobie et al.
Car door hanger and trolley wheel, Freight.....E. A. Hill
Car door operating mechanism (2 pats.).....J. M. Hansen
Car draft rigging, Railway..J. F. O'Connor
Car, Dump (2 pats.)....R. M. Zimmerman
Car, Gondola.....J. M. Hansen
Car, Railway.....E. H. Gold
Cars, Lamp shifting meehanism for street.....A. Candle
Cars, Metal wall construction for railway.....E. H. Gold
Carpet plucker (2 pats.).....J. C. Owens
Carpet sweepers, Vacuum attachment for..J. Schirra
Cartridge fuse (Reissue).....A. F. Daum
Carving machine.....F. H. Richards
Cash register.....W. H. Muzzy
Cash register, Multiple.....E. J. von Pein
Casting steam turbine wheels, &c.....W. T. Hopson et al.
Cattle guard.....I. R. Utterbach et al.
Cellulose, Treatment of (2 pats).....H. Peters
Centralizing totalizer apparatus, Automatic.....E. Poyet
Chain guide, Pull.....E. H. Freeman
Chain links, Manufacturing..J. M. Dodge
Chair.....E. H. Smith
Chair head rest.....J. R. Etter
Chuck.....J. R. Saylor
Chuck, Core.....F. W. Kremer
Chuck or spider, Adjustable....H. J. Hoyt
Chutes, Automatie regulator for coal.....W. N. White
Cigars, Material for closing perforations and fractures in.....L. Rodenhausen
Clamp member.....C. G. Matthias
Clasp.....L. Anderson
Cleaning implement.....J. S. Sourek
Clevis connection.....A. Anderson
Clock, Calendar.....W. S. Overlin
Clock, Electric program.....G. P. Milde
Clothes drier.....M. Herscovitz
Clutch.....G. W. Morris
Clutch, Friction.....E. B. Cushman
Clutch, Friction.....C. M. L. Moseson
Clutch, Friction.....J. C. Brewin
Coke oven.....A. O. Jones
Collar, Horse.....E. A. Border
Combustion, Apparatus for generating products of.....T. H. Holroyd
Combustion chamber (2 pats.).....B. H. Blaisdell
Compasses, Support for.....W. S. Ely
Composing and line casting machine, Typographical.....H. Degener
Composing and line casting machines, Distributing mechanism of matrix.....C. Muehleisen
Composiug machine, Pattern or record strip.....J. S. Bancroft et al.
Composition of matter.....K. Hofler
Concrete construction.....J. E. Conzelman
Concrete construction.....A. J. Meier
Concrete work permanently water tight, Making.....H. J. Livingston
Conductor, Molded.....E. G. Gilson
Conforming gage.....D. S. Humphrey
Conveyer.....C. U. Dahlgren
Conveyer cleat, Cable chain..E. Demarest
Cooker, Fireless.....C. P. Holland
Cooking vessels, Heat distributer and accumulator for.....G. Lake
Copy holder.....G. A. Marsh
Cork composition and making same.....P. F. Lenhart
Corn gathering and loading machine.....J. Boda
Cottage, Portable.....H. S. McMillin
Cotton shrubs, Preventing the degeneration of.....W. Sehutze
Couch, Suspension.....J. B. Patterson
Counter guard.....C. A. Glockler
Coupling.....W. A. Lorenz
Crane, Collapsible water.....E. R. Sheetz
Cranes and the like, Colleetor for traveling.....E. L. Hoofring
Crate, Folding.....J. R. Crowder et al.
Cream separator.....H. O. Fisher
Crusher.....T. Wilma
Cuff-pin.....E. W. Morehouse
Cultivator.....S. L. Allen
Cultivator.....B. F. Luke et al.
Cultivator, Rotary.....T. S. Eidem
Cups or shells, Machine for trimming....M. F. Cahill
Current motor.....W. Napier
Currycomb.....R. T. Gillenwater
Curtain fastener....J. A. and C. P. Fisher
Curtain fixture, Adjustable..E. B. Smith
Cuspidor and the like.....C. S. Crawford
Dam.....J. C. Wheelou
Delinting machine.....H. M. Hammer
Dental filling material.....A. G. Meier
Dental foil and making same, Composite..J. J. Kessler
Dental heater, Electric....W. and D. Asch
Derrick.....A. G. A. Schmidt
Diameter gage.....W. B. Mair
Die and shearing mechanism....T. C. Best
Disinfector and deodorizer (Reissue).....J., W. H., and E. R. Williams
Display cabinet.....C. L. Kunz
Display case, Folding.....D. Weinstock
Display deviee.....W. Weller
Distilling apparatus.....W. S. Simpson
Ditching maehine.....D. G. Woods
Door brace.....F. J. Lee
Door fostener, Emergency exit.....W. H. Hart et al.
Door, Folding.....S. Ranley et al.
Door mat.....S. Skowronski et al.
Door sustaining means, Sliding (4 pats.)..T. C. Prouty
Dough mixing method and apparatus.....H. Gottschalk
Draft and smoke consumer, Induced.....D. Goff
Drawing instrument.....D. H. Whlte
Dresser and bucaru.....A. Liehtenstine
Drill presses, Belt gearing for.....J. C. De Bruyn
Drills, Core lifting applianee for.....L. C. Harden et al.
Drinking fountain, Poultry.....C. C. Levy
Driving meehanism.....E. A. and E. L. Eustiee
Dye, Monoazo.....W. Herzberg et al.
Dyes of the anthraquinone series, Vat, (2 pats.).....W. Herzberg et al.
Ear ring.....H. Levi
Elastic fluid motor.....W. F. Born
Electric apparatus, Controlling vapor.....P. H. Thomas
Electric apparatus, Vaeuum tube.....D. M. Moore
Electric connecting plug....W. R. Wolcott
Electric controller.....A. C. Eastwood
Electric current shunting deviee.....R. W. W. Grigsby
Electric devices, Controlling vapor.....P. H. Thomas
Electrie heater.....E. Thomson
Electric lights, Fuse attachment for.....J. M. Cummings
Electric machine, Dynamo.....H. G. Reist
Electric meter.....G. A. Scheeffer
Electric wire for vulcanization, Maehine for reeling rubber covered..T. J. Seward
Electrical condnctor.....H. K. McIntyre
Electrieal instruments, Holding and releasing device for.....H. B. Taylor
Electrical system, Constant potential.....D. R. Lovejoy
Electrically heated implements, Safety device for.....H. A. Hills
Electrode and making it, Storage battery (3 pats.).....W. Morrison
Electrolyte for aluminum cells.....F. W. Peek, Jr.
Electromagnetic instrument...W. K. Menns
Elevator.....G. N. St. Clair
Elevator automatic guard.....F. Jira
Elevator bucket deflector..G. N. St. Clair
Embroidering machines, Device for holding the material in.....M. Schoenfeld
Embroidery machines, Needle thread guiding device for shuttle.....V. Kobler
Engine reversing mechanism, Explosive.....F. A. Gagnon
Engine starting crank, Gas..F. J. Pelling
Engine starting deviee, Gas..D. A. Baldwin
Engines, Cylinder and water jacket for internal combustion.....I. Crabb
Engines, Interrupting mechanism for electric ignition systems for internal combustion.....A. Zahringer
Explosive.....M. F. Lindsley
Explosive and producing the same and its ingredients.....H. Hibbert
Eyeglass case.....J. E. Boyle
Eyeglass mounting.....G. R. Hare
Eyes, Mechanical.....P. C. Jacqnerod
Fabric treating compound..S. M. Hermann
Fabrics, Treatment of.....A. Huillard
Farm gate.....J. B. Storms
Fastening device.....A. G. Hoegren
Faucet, Fluid meter.....W. C. Moore
Feed bag.....H. H. Gardner
Fiber needle cutter....A. J. Buehand et al.
Filament.....W. D. Coolidge
Filaments for incandeseent electrie lamps, Metallic (2 pats.).....K. Farkas
Fire alarm, Automatic.....L. Robillot
Fire alarm box.....F. W. Cole
Fire alarm system.....W. L. Denio
Fire alarm system for telephone exchanges.....W. L. Denio
Firearm, Automatic.....G. Toborg
Fireplaces, Arch and regulator attachment for.....L. E. Clawson
Fish sealer.....P. H. K. Kalnin
Flask deviee, Snap.....L. A. Boss et al.
Flat iron, Self heating.....R. Hildebrand
Flier frame, Sheet metal...L. T. Houghton
Flying machine.....W. C. Lawson
Flying machine.....R. C. Whlte
Flying maehlne.....F. E. Borkenhagen
Flnid heating apparatus....E. C. Neweomb
Flume.....G. L. Hess
Flnshing apparatus.....L. Simmons
Folding rack.....J. Kohn
Folding stand.....E. N. Humphrey
Foods for the market, Preparation of.....J. C. Kniss
Friction deeise (2 pats.).....P. M. Freer
Fruit picker.....E. Hnbe
Furnace.....A. Tomkins
Furnaces, Supplemental heating attaehment for.....J. A. Abrams
Furniture, Adjustable sehool....P. L. Ross
Furnitnre legs, Componnd braee for.....O. L. Beardsley
Game apparatus.....D. H. Taylor
Game board.....B. G. Braine
Game deviee.....W. G. Fulton et al.
Game table.....C. Esehenbruecher
Garden tool.....H. Stults
Garment hanger.....T. J. Hamilton
Gas burner.....A. G. Sherman
Gas engine.....P. W. Egan
Gas lock, Automatie safety...R. A. Mack
Gas, Making (2 pats).....H. L. Doherty
Gas producer.....N. Latta
Gas produeer.....A. M. Levin
Gas producers, Automatie poker for.....W. F. Rnst
Gas prodneing apparatus, Regnlating pressure in.....H. L. Doherty
Gas works regulator.....G. C. Hicks, Jr.

Gases, Method of and apparatus for altering the condition of.....K. Ahlquist
Gearing.....C. E. Hughson
Gearing.....J. H. Downing
Glass articles, Apparatus for drawing hollow (2 pats).....M. J. Healy
Glass flattening table.....G. A. Shields
Globe and globe holder....R. E. Larzelere
Governor, Automatic cut off..A. Guenther
Grab, Automatic.....C. Laudi
Grain shocker.....J. Fritz
Graphophone, Positively fed disk.....T. H. Macdonald
Grapple.....L. M. Lenderman
Grater.....S. M. Silberberg
Grinding disk.....J. G. Bryant
Grinding or crushing mill.....F. H. and F. H. Brown
Gun cleaning rod, Combination telescoping.....D. W. King
Hair from haircloth, Separating.....M. Brodkowsky
Hair pin.....J. David
Hammock and frame therefor, Adjustable couch.....I. E. Palmer
Hand protector.....G. Lake
Handle attachment for implement holders..S. G. Wilson
Harness breast attachment...O. Brockman
Harrow, Riding.....J. R. Howell
Harvester reel.....J. Boda
Hay rack brake.....G. C. Battin
Hay rake and tedder, Combined.....J. N. J. Hilbert
Headlight operating mechanism.....H. Kiehlbauch
Heat distributing system.....W. H. Pearce
Heating system, Steam.....E. H. Gold
Heel.....U. Mahler
Heels and soles, Boring tool for shoe.....M. F. Creahan
Hinge.....C. J. Soss
Hinge, Receptacle corner.....L. Mollart
Hoist and tractor excavator, Tractor.....P. E. Holt
Hoisting apparatus (2 pats.)..E. A. Norris
Hoop driving machine, Barrel.....W. C. Stevens et al.
Hop picker.....E. C. Horst
Horseshoes, Applying calks to.....E. D. Chaninel et al.
Horseshoes, Sanitary antislipping attachment for.....H. L. Gottesburen
Hose clamp.....J. J. Higgins
Hydrovacuum creator.....J. J. Gorman
Ice cream freezer scraper.....E. Glaser
Ice pick.....C. L. Ruehs
Ignition device, Percussive..W. H. Sodeau
Ignition plug.....B. F. Merritt
Index systems, Tab for card..J. M. Meyers
Indexing device, Cam.....C. G. Lundgren
Ink from paper, Removing....J. E. Bonser
Ink well.....S. E. Anderson
Insulating electric conduits, Process and apparatus for.....C. Thibodeau
Intermittent operating mechanism.....N. W. Young
Internal combustion engine.....T. Reuter
Internal combustion engine, Multicylinder.....H. T. Burns
Iron, Producing practically pure.....A. Smith
Knitting machine drop stitch mechanism..F. H. Strochrel
Knitting machine striping and embroidering mechanism.....F. H. Strochrel
Knitting machines, Web holder for rib...R. W. Scott
Knob and spindle connection....W. Curlett
Lace retainer, Shoe.....H. C. Teuton
Ladder, Fruit picker's....T. O. Huchinson
Ladders, Detachable leg for....A. Thomas
Lamp.....N. Blount
Lamp, Acetyleue.....M. W. Moore
Lamp for automobiles, Dirigible.....J. Drzewiecki
Lamp globe holder.....T. J. Litle, Jr.
Lamp, Incandescent.....S. D. Washburn
Lamp, Vapor.....A. H. S. Swan
Lamp, Vapor electric.....P. H. Thomas
Lamp with drawn metal wire filament, incandescent.....K. Farkas
Lamps, Controlling valve for vapor.....A. H. S. Swan
Lamps, Manufacturing glass...E. W. Bryce
Lantern frame.....W. S. Hamm
Latch, Car door.....C. Weber
Lathe.....A. Kiehe et al.
Lathe, Bobbin.....R. G. Smith
Lead salts, Making.....L. S. Hughes
Lemon squeezer.....C. L. Kee
Level.....C. W. Rosenquist
Life preserver.....C. H. E. G. Muth
Light diffuser, Arc.....A. H. Hawkes
Liquid fuel burning apparatus.....J. A. Staverns
Load hinder.....C. Wahlgren
Lock.....J. R. Fletcher
Lock.....W. Anderson
Locomotive.....A. F. Batchelder
Locomotive, Electric (3 pats).....A. F. Batchelder
Loom shuttle, Weaving.....M. and R. Lemarchand et al.
Lubricating system.....E. Woerner
Lubricating system.....W. A. Keith
Lubricator.....H. S. Blynt
Lubricator.....W. Booth
Lumber jack.....L. S. Perdue
Mail bag catching and delivering apparatus.....J. N. Isenberger
Mail case.....M. N. Duuham
Mail delivering system, Rural.....F. C. Brooks
Malt beverages, Manufacture of (Reissue).....R. Wahl
Manikin, Walking.....H. A. Mann
Match safe.....H. Mick
Match safe.....O. A. Chaney
Match safe, igniter and cigar cutter.....E. P. Smith
Matrix drying press.....A. H. Cruse
Matrix drying press.....G. E. Pancoast
Matrix marking machine.....J. S. Bancroft et al.
Mausoleum.....J. B. MacKay
Matrix milling machine.....J. S. Bancroft et al.
Measuring instrument, Electrical.....W. Klinckert
Metal, Accelerating the elimination of occluded slag from molten.....R. Lock
Metal articles, Treating.....J. C. Russell
Metal spring.....L. L. B. Denis
Metal structure, Expanded....H. E. White
Metal working.....W. R. Whitney
Metal working machine, Automatic.....F. E. Brightman
Metals and minerals from stream beds, Recovering valuable.....C. D. Grove
Metallic tie and rail fastener.....W. J. Sheldon
Milk can.....L. R. Steel
Milker, Pneumatic cow (2 pats).....J. Ripczinske
Milling machine.....G. D. Sundstrand
Mining sulfur.....H. Frasch
Mining tool.....A. W. Harris
Moistening device.....A. H. Linaweaver
Molds, Machine for jarring..H. R. Atwater
Motor.....G. W. Brewer
Motor and machine stand..C. E. Hathorn
Motor control system.....H. E. White
Motor control system, Electric.....A. C. Eastwood et al.
Motor control system, Electric.....J. F. Schnabel
Motor drive, Electric.....R. H. Rogers
Motor starter and regulator, Compound..W. H. Gaulke
Music roll holder.....I. B. Smith
Music stand and leaf turning apparatus..J. A. Palmer
Musical instrument sheet adjusting device, Mechanical.....F. G. Lynde
Nailing and similar fastening machine.....D. J. G. Miller
Needle threader.....W. J. Rogers
Nitro compounds, Manufacturing.....G. E. Potts
Nut lock, Bond wire retaining.....W. E. Davin
Oil burner.....R. D. Mains
Oil burner.....W. M. and R. W. Burns
Oil burner.....C. Marchese et al.
Oil burner.....E. N. Shaw
Oil burner for lamps.....C. C. Briand
Oil transporting apparatus.....E. N. Mills
Orchard heater.....T. H. Stewart
Orchard heater.....P. H. Troutman
Ore products for the recovery of the metal contents thereof, Apparatus for treating crushed.....A. J. Arbuckle
Ore products, Means for separating liquid from crushed.....W. A. Caldecott
Ore roasting furnace.....T. Edwards
Orthodontia apparatus....T. H. Montague
Oven door.....W. R. Jeavons
Oxid, Manufacture of ferric.....J. Gill
Oxids of nitrogen to higher oxids of nitrogen, Conversion of lower...F. Sparre
Packing for piston rods, Metallic.....J. H. Lewis et al.
Packing, Metallic piston rod.....W. Hoey
Packing, Piston.....E. Duchesne
Packing receptacle.....W. Ekermeyer
Packing ring, Metal.....R. B. Wasson
Packing rings, Making metal..R. B. Wasson
Padlock.....F. W. Mews
Paints, Making.....A. S. Ramage
Paper doll.....C. Spear
Paper, Machine for making deckle and thin edged.....J. W. Moore
Paper roll lock block.....J. L. Orr
Parer, Orange.....F. G. Mower
Paring and slicing knife..F. O. Jaques, Jr.
Partition, Folding.....J. W. Wildman
Paster for wrappers and the like.....W. P. Sargent
Pencil pointer.....F. B. Canode
Pencil sharpener.....L. Hayne
Percolator.....J. Piaseczuy
Percolator, Cereal.....G. Lake
Photographic printing machine..G. R. Olson
Piano hammer, Double.....F. M. Williams
Pick.....G. Brendel
Piles and other submerged structures, Device for protecting.....T. Nixon
Pin points, Safety tip for..S. J. Macomber
Pipe and bolt thread cutting machine.....C. Bergren
Pipe cutting tool.....L. Toegel
Pipe, sewer, and conduit.....G. L. Smith
Pipe wrench.....W. L. Bessolo
Planter, Potato.....A. R. Prubil
Plaster boards, Method of and apparatus for producing.....D. E. Roberts
Plow.....J. L. Prather
Plow.....J. W. Webb
Plow.....C. H. Kelley
Plow and cultivating implement, Disk.....G. O. Westendorf
Pneumatic despatch tube system.....F. H. Wolever
Portable furnace.....M. Davis
Potato digger.....J. Reuther
Potato digger.....J. Fritz
Potato digger and loader.....J. Fritz
Power, Explosion apparatus for generating and developing.....T. H. Holroyd
Power plant, Fluid pressure.....L. D. Lovekin
Power system.....W. E. Adams
Power transmission mechanism.....B. F. Lambert
Printed products, Machine for assembling (2 pats.).....E. P. Sheldon
Printing presses, Stereotype or electrotype cylinder for.....L. A. Wheat
Proof press.....G. L. Drummond
Propeller.....T. Murray
Propeller, Boat.....S. B. McHenry
Propeller, Screw.....E. W. Young
Propeller, Ship's.....F. Clennell et al.
Propulsion, Prime mover for marine.....C. G. Curtis et al.
Protective device...O. E. Schweitzer et al.
Protractor.....J. Goodfellow
Pulley.....M. A. Kendall
Pulling-over machine.....R. F. McFeely
Pump.....W. L. Hamilton
Pump, Well.....J. P. Nicholas
Pumping apparatus, Centrifugal.....H. Keller
Punch (Reissue).....W. A. Whitney
Radiator.....F. W. Dilks et al.
Radiator.....W. C. McKeown
Radiator and radiator sections therefor.....F. A. Feldkamp
Rail clamp.....W. F. Hetrick
Rail fastening device....H. E. Zimmerman
Rail joint.....M. Connolly
Rail splice.....A. Morrison
Rail splice bar..W. P. and S. G. Thomson
Rail support, Third.....W. B. Potter
Railway rail and tie fastener..J. S. Shoff
Railway rail joint.....F. C. Glaze
Railway road bed, track, and rail construction.....J. N. D. Brown
Railway switch.....P. Barc
Railway switch, Automatic street.....J. Meuto
Railway switch signal.....W. J. Bell
Railway switches, Locking mechanism for..F. H. Ellis
Railway tie and fastener.....J. C. Pennell
Railway tie, Composite.....J. H. Killinger
Razor, Safety.....J. D. Henderson
Razor, Safety.....E. F. Schoell
Razor, Safety.....C. J. Kiefer
Razor, Safety.....O. Kampfe
Razor, Safety.....A. Zilbersher
Razor, Safety.....C. E. Smith et al.
Razor, Safety.....A. D. Grover
Receptacle for holding and dispensing articles.....F. W. Shee
Reflector.....W. Haehnel
Reflector, Ventilated.....J. Meyer
Rheostat.....L. Crump
Rim fastening, Demountable.....C. R. Twitchell
Rivet anvil and remover.....C. O. McKinney et al.
Rod reel.....V. E. Edwards
Roofing material, Packing.....H. M. Reynolds
Rope.....E. P. Frederick
Rotary kiln.....P. T. Liudhard
Rubber joint making instrument.....W. H. Welch
Rubber, Machine for converting latex into sheets of crude....F. E. Mellinger et al.
Saddle, Harness.....W. C. Trask
Safety pin.....A. Collins
Sash balance and fastener, Combined.....J. Menegus
Sash bar or rafter.....R. O. King
Saw clamp.....A. T. Binkerd
Saw handle.....G. McKinney
Saw swage.....F. H. Tappendorff
Scale, Weighing.....A. De Vilbiss, Jr.
Scale, Weighing.....W. A. Sholty
Scaling machine, Euvelop.....R. E. Nichols
Secoudary battery.....C. J. Coleman
Self switching alarm.....B. Uhlmann
Separating machine.....F. M. Cole
Sewage ejector, Automatic.....W. P. Anderson
Sewing machine.....C. F. Gray
Sewing machine binding attachment.....A. Rontke
Sewing machine thread waxiug device.....O. E. Brown
Shade holder.....G. W. Goodridge
Shade roller.....C. K. Snavely
Shaft lining.....W. T. McCarthy
Sharpener, Dick.....J. R. Buttweiler
Shaviug case.....L. C. Thompsou
Shearing machine, Automatic.....E. Brown et al.
Sheet jogger.....E. W. Korff
Sheet metal construction.....A. K. Pruden
Ship or vessel (2 pats.).....G. E. Elia
Ships' doors, Device for tightly closing and opening from a distance...G. Mazzolini
Shirt waist.....P. B. Reed
Shock absorbing coupling..D. F. Sneeringer
Shoe antislipping device.....A. E. Baker
Shoe beating machine.....O. Ashton
Shoe machinery feeding mechanism.....W. O. Wheeler
Shovel attachment, Steam....E. S. Berney
Show case.....F. Kainer
Show window structure....D. J. Murnane
Shuttle heater.....N. Morneau
Sidewalk form.....J. Ubbink
Signal actuating mechanism, Electric.....W. J. Bell
Signals, Electrical apparatus for transmitting and receiving.....A. Barr et al.
Signaling system, Selective.....V. Durbin
Silos, Top for.....E. F. Schlichter
Skirt marker.....F. H. Deknatel et al.
Sleigh, Automatic.....A. Finkelstein
Small arm.....P. Mauser
Small arms, Practice apparatus for.....H. B. Hollifield
Soldering tool.....H. P. MacLagan
Soles, Making.....W. B. Greene
Sound transmitter.....F. E. Howes
Souuding apparatus.....F. Schubert
Spark plug.....C. A. Mezger
Spark plug.....W. S. Witter
Speed measuring instruuent....F. E. Wolf
Speed varying device for machine tools..W. C. Fish
Spinning machine.....F. S. Culver
Spinning, twisting, and like machines, Spindle support for.....A. H. Morton
Spring contracting and removing device...G. W. Bryant
Spring wheel.....G. A. and S. E. Siders
Springs, Machine for applyiug bands on leaf.....J. R. Blakeslee
Stamp, Computing time.....J. C. Wilson
Stamp mill screen.....D. C. En Earl
Stanchlon.....H. Ramminger
Stay bolt, Flexible.....F. G. Hunter
Steam boiler.....W. H. Mears
Steam generator.....A. L. Austin
Steam generator.....C. S. Drummond
Steering and driving mechanism, Combined.....S. E. and G. A. Siders
Store front and show window (2 pats.)..D. J. Murnane
Store service apparatus.....E. C. Gipe
Store front and show window structure.....D. J. Murnane
Stove or furnace.....E. V. Coulston
Strainer.....E. C. Courtwright
Street and station indicator.....A. H. Carroll
Striker apparatus, Pneumatic.....M. M. Kastner et al.
Submarine workshop.....W. H. Baker
Suction cleaner.....J. B. Powell
Suction roll.....O. H. Dowell
Sulfur dioxid, Making.....F. Meyer
Surfacing material and producing same.....M. A. Pophess
Surgical apparatus for drying or the like..H. A. W. Grube
Swimming and life preserving device, Combined.....G. W. Learman
Swingletree clip.....L. B. Hartzell
Switch mechanism, Electric..G. S. Tiffany
Switch mechanism, Electric.....R. W. Armstrong
Switches, Tension adjustment for pull.....C. D. Platt
Tag attaching device.....J. F. Davis
Teaching typewriting, Device for.....H. E. Feakes
Telephone mouthpiece....F. O. Beuermann
Telephone repeating circuits.....C. Adams-Randall
Telephone repeating system.....C. Adams-Randall
Telephone repeating system circuits.....C. Adams-Randall
Telephone ringing device.....H. N. Faris
Tent, Folding.....H. G. Hergelroth
Tent pin, Anchoring.....S. G. Gillespie
Textile material, Conditioning.....I. E. Palmer
Theater and stage construction.....H. W. Bishop
Theatrical appliance.....C. F. Autenrieth et al.
Thermometer case.....H. R. Smith
Thermostatic switch.....B. J. Smith
Time controlled switch.....G. W. Free
Tire.....J. M. Benham et al.
Tire, Pneumatic.....W. E. Andrews
Tire, Resilient.....J. Hart
Tire support and tool case, Combined.....J. C. Temple
Tire tool.....C. Owen et al.
Tires of vehicles wheels, Apparatus for inflating.....F. Kassner
Tongs, Brick.....J. Deer
Tongs, Casing.....W. Lewin
Tongue support.....J. W. Stahl
Tool holder or bracket.....O. A. Smith
Tool support, Duplex.....C. Winkler
Tooth, Artificial.....I. Stern
Torch, Spraying.....E. F. Roy et al.
Toy.....C. B. Johnson
Toy balloon.....T. M. Gregory
Toy puzzle.....Z. Mendel
Toy, Wheeled figure.....J. B. Hill
Transformer.....M. O. Troy
Trap.....J. A. Johnson Jr.
Treadle, Folding.....T. Danquard
Trolley.....F. H. Howard
Trolley.....H. Jolly
Trolley wheel support.....C. A. Welsbacher et al.
Trousers fastening device....F. H. Sprague
Truck, Car.....G. Komarek
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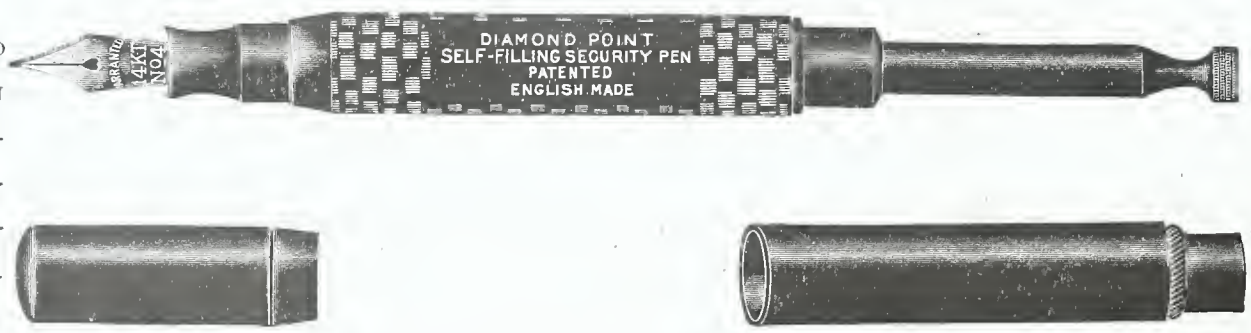
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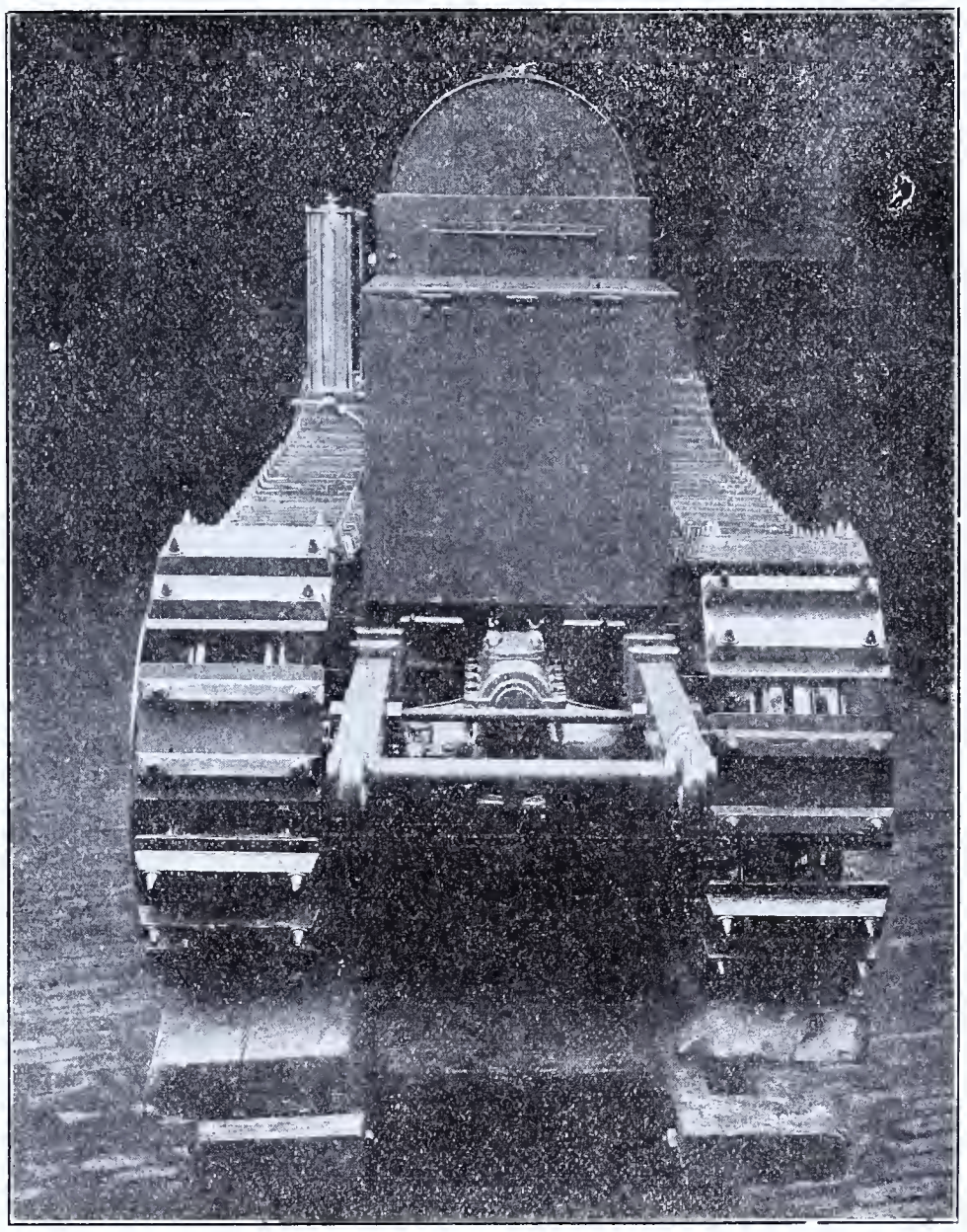
VOL. XXIV. NO. 2. } WASHINGTON, D. C.—FEBRUARY 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

MOTOR SLEIGH FOR THE ANTARCTIC.

By C. VAN LANGENDONCK.

THE EQUIPMENT of the British expedition to the South Polar regions, under the leadership of Captain Scott, will include a motor propelled sleigh. Such vehicles were employed on the Shackleton and Charcot journeys, but this latest sleigh is materially different in design. Instead of having runners in place of the front wheels and being propelled by spuds attached to sprockets in lieu of the rear wheels, it is designed somewhat after the caterpillar style. The frame has four large sprockets, two on each side, instead of the wheels, over which passes a heavy roller chain, the bottom side of which is fitted with battens and spuds. A runner is fixed between the two parts of the chain, so that when the lower section of the latter is in connection with the ground, it supports the whole weight of the sledge. The drive is transmitted to a chain gear box, having two speeds, of two, and three and a half miles per hour, respectively. There is no reverse, no brake, and no steering. This latter at first sight appears a handicap, especially in the negotiation of sharp corners, which is admittedly difficult; but among the ice fields of the Antarctic, where the road is of illimitable width, corners can be avoided. The vehicle has been submitted to severe tests over the icy plains of Norway, and its behavior was in every respect satisfactory. It is not primarily intended to carry the stores of the party, but to act as a tractor, and it showed itself fully capable of hauling a train of the ordinary sledges, laden with equipment. Special arrangements have been made in regard to the carburetion, while the oil for lubrication has been expressly prepared, and has the property of not congealing at low temperatures.

The photograph shows details of construction. The motor, which has been especially designed for the purpose, has four cylinders arranged vertically, and develops twelve brake horsepower. The cylinders are cast in pairs, and are air-cooled. The lubrication is forced by means of a gear pump. The carbureter is exhaust jacketed and is also fitted with a heating pan in which petrol or spirit can be burned to heat the carbureter before starting. The strength of mixture is also adjustable.



MOTOR SLEIGH FOR ANTARCTIC EXPEDITION.

The drive to the gear-box is through a leather cone clutch and universal joints. The drive from the gear-box through the worm-driven axle is through the usual type of shaft. The worm axle, as will be gathered from the road speeds, has a very big reduction. The worm is placed on the top, and is fitted with more than usually large thrust bearings. The live axle is not fitted with a differential, but a clutch is provided by which the worm-wheel can be clutched from the axle for coasting. The wheels run on extensions of the axle tube, and the internal shaft only takes the driving stresses. The front axle is formed by a tube on which the wheels run. Both front and back axles are rigidly mounted on the frame, and carry chain wheels on both sides, over which pass endless chains, which are fitted with battens and spuds.

The sleigh is provided with a runner, upon which the rollers of the chain bear. The chain passing between this runner and the ground supports the whole sleigh and propels it as the wheels turn.

No brakes have been fitted, as the big reduction ratio of the worm renders the sleigh quite unreversible, thus obviating the necessity for any brakes. A driver's seat is arranged behind the engine and the latter is enclosed in a bonnet, of which the petrol bank forms the top. The frame is of wood, and underneath the sleigh is fitted a large under-shield which presents a smooth surface to the snow.

The curious fact is noticed that when the sleigh is under way, the chain where it touches the ground appears to stand still, while the sleigh slides over it. This actually takes place, the top of the chain travelling forward at twice the speed of the sleigh.

This development in the art of sledging (recognized as a prime factor in the exploration of polar regions) is the result of experience of many years. After the endeavors to find a practicable ocean passage through the

Arctic ice to China and India had failed, the North Pole become the principal object of geographical research. A hundred years ago it became evident that little could be done with ships alone, and these have served only as points of departure or supply stations for pole seekers. The sledge drawn by dogs or reindeer, was the chief means of transport, and the motor sledge has the vast advantage over these, that it does not necessitate the carrying of heavy provisions to feed the traction animals.

The conditions of Antarctic discovery differ materially from those in the Arctic regions. In the latter, the chief difficulty which the parties had to meet was the presence of masses of ice. Polar ice, as is well known, is often accumulated by ocean currents and other agencies into vast mounds or hills, intersected by wide stretches of open water, and the entire mass of ice often moves with the current. Furthermore, it is not possible to pass over this ice by sledge except during a short time in spring. To use this period to the best advantage requires expert knowledge. At the South Pole, on the other hand, there is a wide stretch of land. Mountains, instead of seas, must be crossed. Captain Scott intends to follow the Shackleton route, and hopes to cross the expanse of the level barrier ice, to climb the mountain passes of the mainland, and to cross the lofty inland plain, where impending hunger turned Shackleton back when he was only a few days from the Pole. This expedition will start from the Pacific side. The German expedition, commanded by Filchner, will start from the Atlantic. Filchner had the original idea of testing his men and companions in preliminary polar work, before starting on the crucial expedition. He went with his staff to Spitzbergen a year or so ago, and spent the season there, trying out his supplies and getting ice experience in various forms. The German ship, after landing the party of explorers, will go into oceanographical researches. Eleven men will remain at the station, while the others will proceed inland, with their various equipment. They will have Manchurian ponies, and also a motor sleigh, which was tested last winter in the Bavarian forests, and a wireless apparatus which will be able to cover 750 miles.

Other expeditions are also planned or on the way, the Japanese, Scotch and Americans entering in the race for the Pole. Whether this is reached or not, there is no doubt that the world's knowledge of these inaccessible regions will be much enlarged as a result of the present efforts. The question will be settled, whether the land consists of a vast continent, twice as large as Australia, or whether it is merely the largest archipelago in the world. Shackleton thinks that the lofty mountain chain is an inland segment of the high mountains of the West Antarctics, and stretches across the continent. Others believe that the whole is merely a group of islands. If it is a solid land mass, it is one and a half times the size of Europe, and must have a mean elevation of 6,000 feet above sea level, or double the mean height of Asia. Ten years ago, we did not know that the Antarctic lands were ever a part of South America. We had no proof that the Antarctic, like the Arctic, had had a torrid period and tropical vegetation of great luxuriance. Shackleton proved this, in other ways, by finding coal two miles above sea level and within 112 miles of the South Pole. It is estimated that a million dollars in ships, ponies, supplies, ice motors, wireless outfits and the like will be hidden in the Antarctic in the next few months. When these expeditions return, they will bring with them much interesting information, and will probably settle many mooted questions.

A Judge and His Kinsman.

An able federal judge of Georgia recently had an occasion to hold the scales of justice in balance while his talented young kinsman zealously and conscientiously struggled in vain to save his client, charged with burglary, from the penalt prison walls. The young attorney was worthy of his st ain and again when he appealed to the decision of the court the judge ruled against him, yet smiled with pride at his ingenious struggle. A new trial and supersedeas were refused, and the accused went to the penitentiary. In illustrating the state of his emotions the judge said: "I am very sure that I was proud of his efforts, and proud that we are descended from the same revo utic n ry sire. Even though I was generally obliged to rule against him, when I observed his original and vigorous exertions my emotions were not unlike those of Mrs. Whackles who had determined to turn down Mr. Richard Swiveller, who, as we are told in the 'Old Curiosity Shop,' was suing for the hand of her daughter, Miss Sophie. Notwithstanding his jealous rage for his successful rival, Cheggs, Mr. Swiveller danced with such skill and agility, and executed such remarkable evolutions on the floor and in the air, that Mrs. Whackles felt after all that it might be a great honor to have such a dancer in the family."

New Zealand Offers Bonus to Inventors.

Twelve thousand pounds sterling, or more than $58,000, will be paid by the New Zealand government as a bonus to the inventor or inventors who develop improved methods to be used in connection with the preparation and utilization of New Zealand hemp.

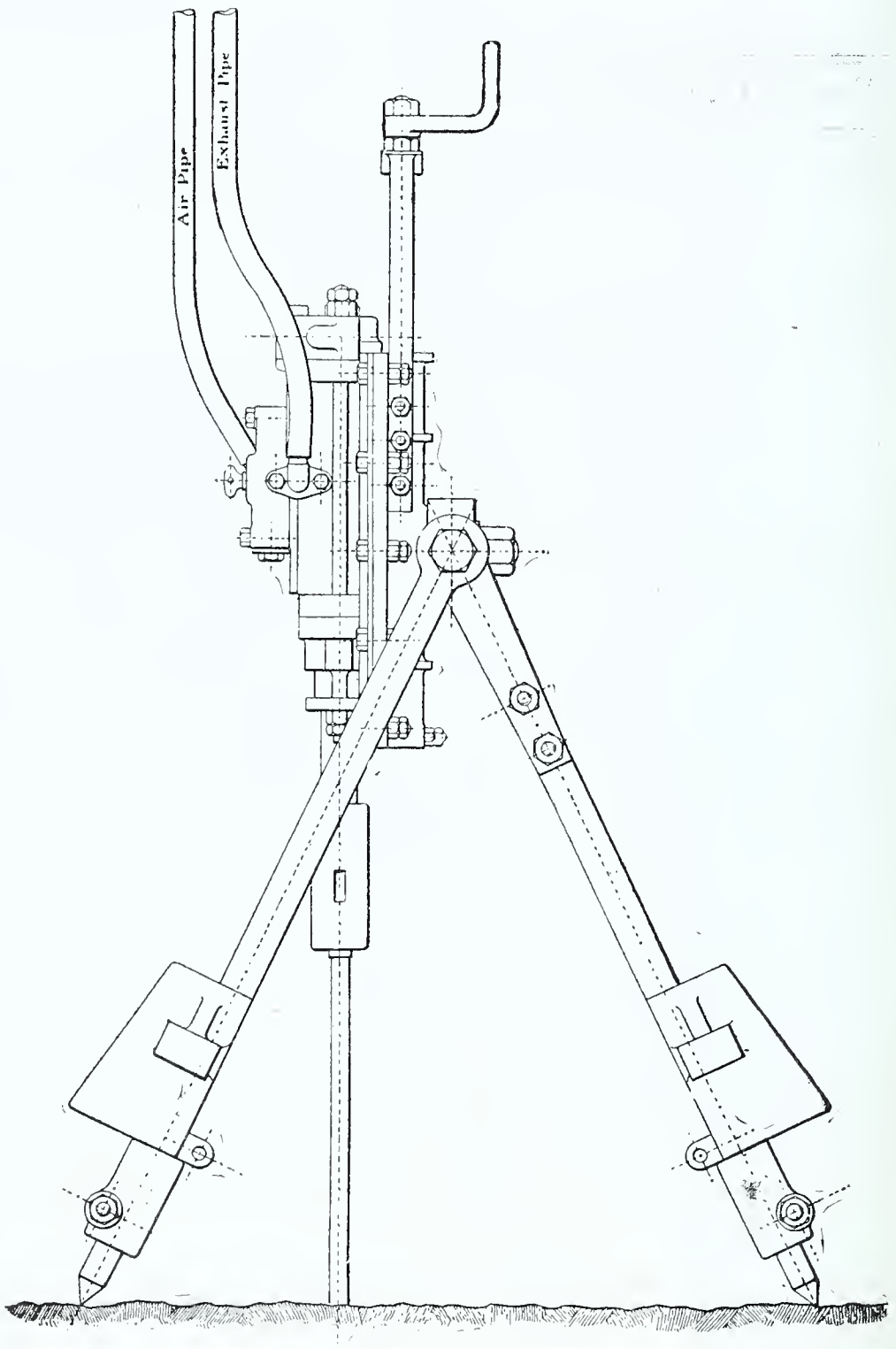
This offer is open until November 30, 1913, and is made by the New Zealand minister of agriculture, under authorization from his government.

It is the hope of the New Zealand government that the competition will develop a machine or apparatus that will be efficient in the extraction and dressing of fiber from the New Zealand hemp plant, and will provide for the utilization of the by-products obtained during the processes of extracting the fiber.

SUBMARINE DRILL.

Oceans and mountains no longer offer a barrier to mechanical progress. Man does not hesitate. in carrying out his work, to scale precipices or traverse quicksands. So many engineering tasks have been accomplished under water in the past few years, that a new line of apparatus is being devised, especially adapted for this work. The accompanying illustration shows a rock drilling machine, intended for submarine use. This is meant for direct action on the rock, but the same device is sometimes used in a caisson, and in this case a modification of the tripod is found necessary. The machine is operated by compressed air. A direct-acting compressor is employed, with air cylinders having a diameter of eight inches and a stroke of twelve inches, all inclosed in a cold water circulating tank. An equipment of this kind widely used in England is mounted on a steel air receiver and is provided with safety valve, pressure gauge and blow-off cock. The compressed air is supplied to the three and a quarter inch rock boring machine through fifty feet or more of flexible hose. The hose is lapped with tarred marline.

Compressed air, which seems to be peculiarly adapted to the purpose, is the favorite form of motive power for this kind of apparatus, though electricity is sometimes used. Various forms of pneumatic tools for submarine work are also employed by divers, including pneumatic augers and hammers for driving light plug holes and for feather-work in stone. Some of the hammers are equipped with rotating devices for driving heavy plug holes into rock. In several instances, a hand rotating device is used with the hammer, instead of providing the automatic action.



ELECTRIC STETHOSCOPE AND TELEPHONE RELAY.

THE accompanying illustration, Fig. 1, shows a novel application of a new telephone relay designed and constructed in London, England, for use as a stethoscope by which the sound of the heart beats or action of other internal organs may be greatly magnified.

It is stated that this electric stethoscope has rendered it possible to detect aneurism and gallstones in the earlier stages, as well as heart disease. It causes the sound of the heart to be three times as loud as in the ordinary stethoscope. This is scarcely sufficient for practical purposes. But if a telephone relay, as illustrated, be attached to the wires of the transformer, the two instruments combined raise the intensity of the sound twenty times or more, and this is ample for all ordinary purposes. The sound to be examined is picked up by the end of the tube *A*, and is heard in the telephone of a head-piece attached to the relay.

It is said that at the invitation of two physicians, the inventor S. G. Brown took the complete instrument, stethoscope and relay, to the London Hospital, where it was tested upon a number of cases of heart disease. It seemed to render diagnosis particularly easy and revealed some phenomena previously only suspected.

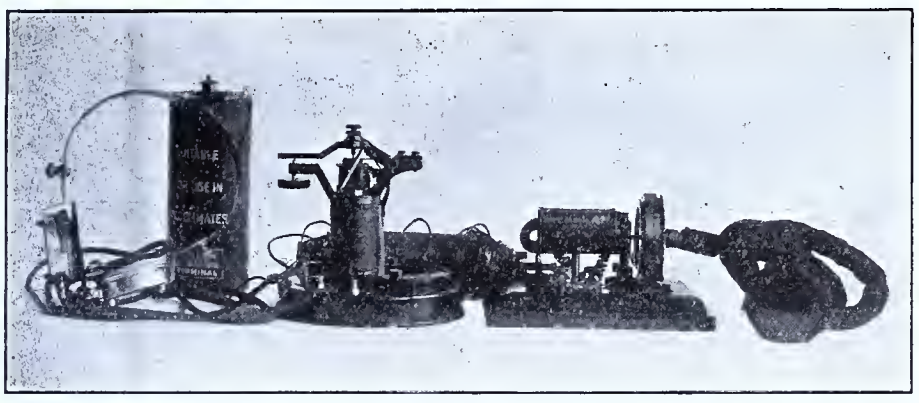


FIG. 1.—TELEPHONE RELAY FOR ELECTRIC STETHOSCOPE.

When the instrument was applied directly to the heart, the sound of the beats given out in the telephones was uncomfortably loud, and easily heard by the patient and all those that stood around, and this even if the telephone were in position on the head of the operator. The stethoscope as used increased the heartbeats to the almost complete exclusion of the shriller or breathing sounds. This has been brought about by mechanically tuning the disc and the reed of the telephone relay to the corresponding low note, and by a proper proportioning of the volume of air enclosed by the tube. On other occasions, during private experiments, the instrument has been tuned so that nothing but the breathing sounds were audible, the passage of air through the lungs being heard as the roar of the wind through a forest of trees. This power of discrimination should be of service in allowing the independent examination of various organs of the body.

It is stated that the stethoscope has been joined to the telephone service in the inventor's house, and when the telephone head-piece was replaced by a transformer, for the sake of experiment, the sound of the heart was transmitted over several miles of telephone line to doctors in various parts of London and to other friends who were interested. All of them reported that the sounds received in the telephone were as loud and clear as when heard locally. The line, therefore, does not appear to produce much loss or distortion. This trial proved that it is now possible for a specialist to examine a patient, at a distance, stethoscopically, and to arrive at a correct diagnosis.

It is true that the instrument, to replace the ordinary stethoscope, must of necessity be more sensitive to sound than the human ear. This is proved by slight noises made in the room being heard in the telephones as loud noises. In consequence of this, the apparatus is padded and guarded as far as possible from all outside disturbances, and the patient should be examined in a quiet room. It will pick up and magnify the slightest sound, and ordinary speaking may be increased to a deafening shout. The ticking of a watch is reproduced in the receiver—a severe test. Such an instrument, when properly constructed for the purpose, may be of use to those who are afflicted with deafness.

In the diagrammatic illustration (Fig. 2) of the stethoscope, *A* is the front part and consists of a shallow brass cell faced by a thin ebonite diaphragm. *A* is placed upon the part of the body to be examined, say the heart; the beating of the heart is communicated to the ebonite diaphragm, then to the air inside the tube *B*, and thus the metal diaphragm *D* is set in vibration. *M O*, are the osmium iridium contact-pieces. *M* is mounted on the diaphragm, and *O* on the steel reed *P*. The magnet *N S* and the reed are carried by a brass frame *E*, which is pivoted or hinged at the lower support *V*. The conduction space is formed between the contacts *M O* by turning the fine adjusting screw *W*, and by the automatic action of the local current from the cell *C* flowing through the winding *K* and round the magnet. *T* is a special telephone transformer of equal windings amounting to 20 ohms resistance in the primary and in the secondary.

It is interesting to note that this property of magnifying feeble telephone currents has made this new telephone relay particularly useful in wireless telegraphy. On replacing the telephone by the relay, the increased sensitiveness doubles the distance over which it is possible to receive signals. Its utility in this direction has been tested by the Admiralty and the Postoffice. In a wireless receiving station, messages, the very existence of which were not even suspected, owing to their extreme feebleness when listened for under former conditions, were easily read with the relay in circuit. At the invitation of Mr. Marconi, Mr. S. G. Brown took two instruments to the Haven Hotel, Poole. In one of the tests (Clifden, in Ireland, sending with the Marconi musical spark) the signals were heard in the telephone, directly connected, as a faint but clear and pleasing series of musical notes. But with two relays joined to the system and working in series, the notes were rendered so loudly as to be heard clearly by every one in the

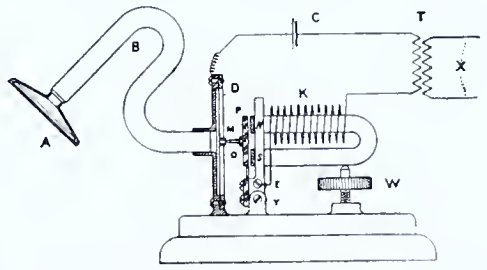


FIG. 2.—RELAY IN DETAIL.

room, and an operator listening at a distance of several yards from the instrument could have deciphered the message. The relay is not easily affected by extraneous noises and vibration. It can thus be carried on board ship and worked in all kinds of weather.

In reference to its utility on ordinary telephone lines, speech may be magnified many times in loudness without perceptible loss in articulation, and the device will work with large currents to a point at which the Bell receiver in its local circuit is responding with uncomfortable loudness. In experimenting over a twenty pound standard cable and speaking only one way, it has been proved that, when a relay is applied, thirty miles may be added to any length through which it is possible now to speak directly. For instance, supposing the length for direct speaking be 20 miles, this may be increased to 50 miles for the same loudness and approximate clearness when the relay is in circuit, either as a single repeater at the end of the first 20 miles or as a receiver at the end of the 50 miles.

It is stated that these tests prove that the telephone currents are increased in strength to the extent of something like twenty times. If still greater magnifications are required than can be obtained with one relay, the simplest method would seem to be to employ two relays working in tandem. Their combined power would then be 400 times. In the majority of cases it is not necessary to add to the natural electrical damping of the reed, but if a piece of soft rubber be made to touch it, the voice can be transmitted with greater clearness, even, than if the conversation were taking place, as usual, in a room. This may be due to the complete absence of echoes.

On account of the local regulating winding, the metal contact *M O* is transformed into the most exquisitely delicate microphone, more sensitive, there is every reason to believe, than could be formed by light pressure between carbons. Such a microphone has rendered possible the construction of the new electric stethoscope.

The drawing, Fig. 2, shows the connections of the relay. *C* is a dry cell, *K* the power resistance regulating winding, *T* the receiving telephone or telephone head-piece of approximately 40 ohms resistance, and *D* an amperemeter or current indicator. When the microphone contact is opened so as to cut down the local current to half its maximum value, the relay is usually at its best adjustment. The telephone currents to be magnified enter by the terminals marked *A* and circulate through the winding *K*.

Sources of Platinum.

The growing popularity of platinum for jewelry—the metal having replaced gold to an extent and being in fact more valuable—makes it of interest to consider the sources of this precious material, which until a few years ago was little known outside the laboratory. This silvery white metal is as hard as iron, but it is very malleable. It is with one exception the heaviest metal in nature, but it is so ductile that wires have been made of it which are one-twelve-hundredths of an inch in diameter.

Platinum is of great value in the arts. It will not amalgamate with quicksilver and it is perhaps the best metal which can be used to carry the current of electricity through the glass of the incandescent lamp. It is used in all kinds of electrical apparatus, and also finds application in dentistry. Since it is not attacked by acids, it is employed for various utensils in the laboratory, and it is alloyed with other metals for various purposes.

It was the war between Russia and Japan that led to the search for platinum in this country, and thus to the discovery of a new source of wealth. The chief platinum mines in the world are in Siberia. When the war broke out our manufacturers were perturbed at the possible cutting off of the supply, and at their request. action was taken by Congress to have our geological survey search for platinum in the United States. The results of the search were so successful that in future much of the platinum will be obtained from sources nearer home than the Urals. The investigations were carried on chiefly on the Pacific Coast, where it was found that the black sands common in that region were full of useful metals, including platinum. Black sand consists of the heavier particles which come from the wearing away of rocks containing certain minerals. All sand comes from rock, and much of it from quartz. Quartz sands are light in color, and are found on the Atlantic Coast. Along the Pacific, however, are great beds of the darker deposits, giving the whole shore when viewed from the ocean a dusky appearance. There are in this section great masses of black rocks and headlands made up of layers of black and white sand. These headlands sometimes result from the dropping of the shore through an earthquake like that of San Francisco. Black sands are also found along the western rivers, and near every placer mine. As a consequence of the investigation, quantities of iron were found, as well as rare minerals useful in the arts. The sands also contain gold and platinum, which have heretofore gone to waste. By a new process of separation, practically all of these can be saved. This is another illustration of the utilization of a product that has always been considered worthless.

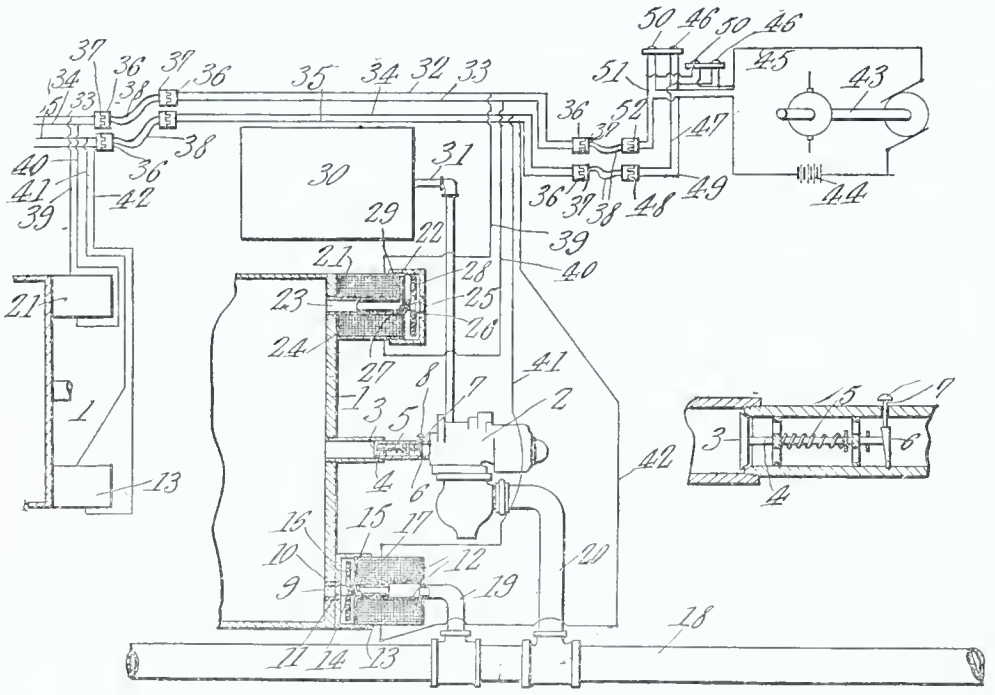
CLEVER NEW PATENTS.

AIR BRAKE SYSTEM.—MINNOW TRAP.—HEAD REST FOR BATH TUBS.

Air Brake System.

A system in which the operation of the air brakes is electrically controlled, and proving means for recharging the auxiliary reservoirs while the brakes are set, thus maintaining additional air pressure under each car ready to apply when the brakes are to be used, has been invented by Frank Goff, of Camden, N. J. It is well known that in the usual system, the front part of a long train often starts before the rear part has been released, so that the train is pulled apart. When the brakes are applied, also, the front part often stops before the brakes reach the rear cars, so that the train piles up, causing damage. These objectionable features are eliminated in this invention.

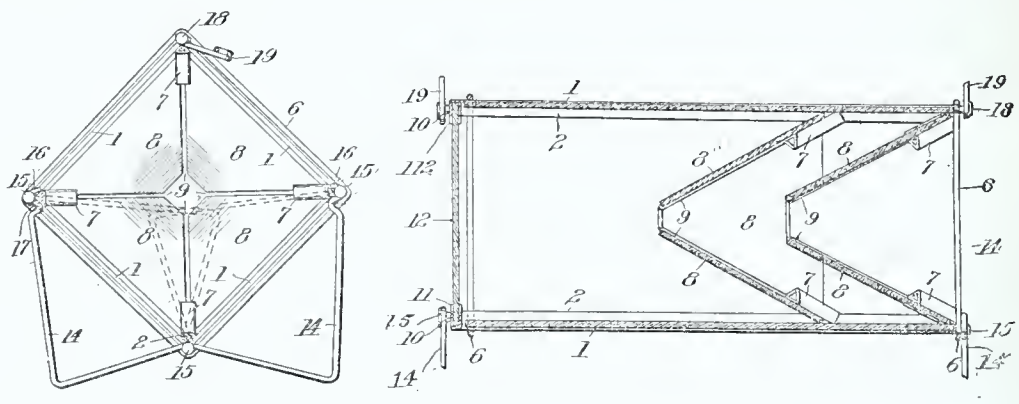
As illustrated herewith, the brake cylinder is connected to the usual valve, the latter being held in place by the spring 5. A wedge 6 moves across the valve casing, and by shifting it in one direction, the stem 4 can be moved longitudinally to unseat the valve. When the wedge shifts in the opposite direction, the spring will reseat the valve. An inlet 9 in the cylinder has a screw plug 10 which constitutes the seat for the application valve 11. This is formed at one end of the tubular core of a solenoid 13, openings in the core between the perforated disk 15 and the magnet permitting air to pass. A solenoid 21 is mounted on the brake cylinder, its inner passage registering with the port 23 in the cylinder. The core of the solenoid has a valve at one end which bears on the threaded seat in the casing 22, and also has ports for communication between its interior and that of the casing. A perforated disk



is secured to the core between the valve and the solenoid. Each car has a series of conductors with electrical connections and so arranged that when all are coupled, the solenoids 21 are arranged in multiple, as also the solenods 13. The locomotive has a generator and storage battery. When the circuit to the solenoid 13 is closed, these are energized and the valves 11 unseated, thus permitting air to pass from the pipe 18 to the interiors of the cylinders, via the openings in the cores. The admission of air is simultaneous throughout the length of the train, and can be readily controlled by varying the length of time in which the circuit is closed. The release of all brakes is effected by completing the circuit through the solenoids 21. The circuit is closed at 50, the magnets are energized, the valves 25 unseated and air escapes through the ports and hollow cores. This mechanism can be used with or without the ordinary triple valve. By employing the release valve, excess pressure need not be employed in the main reservoir, and there is no danger of leaking joints in the air pipes, burst air hose and strain and damage to other parts of the mechanism due to overcharge. Many of the parts of the ordinary brake system may be eliminated, as but three positions of the brake valve handle are needed—running position, service application position and emergency position. It will also be noted that the auxiliary reservoir can be charged while the brakes are applied.

Minnow Trap.

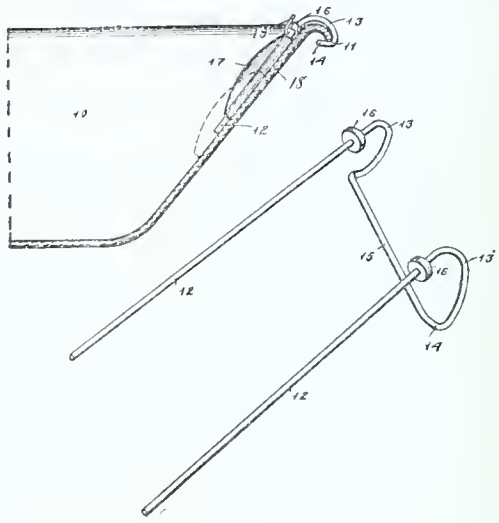
An ingenious and clever device for trapping minnows has been recently patented by Bishop A. Cox, of Fayettevi'le, Ark. It is made in the form of the frustrum of a hollow pyramid projecting into a transparent enclosure, through which the minnows pass to obtain the bait in said enclosure. The trap is made of rectangular pieces of glass, with grooved metal strips at their sides, soldered to square frames 6, as seen in the accompanying cuts, which give an end view and a central longitudinal section. Each of the strips has two short sections 7 obliquely secured to the tubular middle portion, so arranged that the spacing on each strip is the same. These sections hold trapezoidal plates of glass 8, four of which form one of the entrances in the shape of the frustrum of a hollow pyramid. Two channeled strips 10 are secured to the rear of the frame, said strips being closed at one end and open at the other to permit the insertion of the plate which constitutes the door, so that the minnows may be removed at will. The trap is supported by wire brackets attached to the lower longitudinal strips 2. Each bracket is substantially right angular and is pivoted to the pin on the bottom strip. The other end has a lateral hook which engages the pin on one of the lateral strips, so that the shoulder 17 will project over the lower glass plate and the end of the hook will project over the upper plate, thus retaining these in position. The hooks may be folded down when it is desired to ship the trap, and the whole may be carried by a handle. When the hooks on the front bracket are disconnected, the glass sides may be slipped out, and then the trapezoidal plates forming the entrances may be removed. These plates are retained in place by the side plates when the latter are inserted. When the



whole is assembled, there are slots at the rear between the sides and the door which permit the water to enter freely, but prevent the escape of the minnows. The inner entrance is smaller than the outer, so that the smaller minnows can pass into the rear end of the trap. The device is submerged with its entrance down stream. Crackers are placed between the first and second entrances, then the trap is tilted forward, which causes the bait to collect just outside of the inner entrance. When a minnow passes into the trap and finds himself hemmed in between the first and second entrances, he crowds through the inner entrance. This double entrance thus permits of catching larger minnows with the smaller ones, and holds them doubly secure.

Head Rest for Bath Tubs.

In bathing invalids, it is important to have a head rest in the bath tub, and this device is a comfortable and convenient attachment under other conditions. A single piece of spring wire, without bolts or screws, has been adapted for this purpose by Janan Lahl, of Atlantic, Iowa. He takes a piece of wire or rod, comprising two parallel sides, and curves it down and out at one end of each of these sides, as shown at 13 in the cut. At the lower end of the part 13 the wire is bent upward and inward, and between the two parts is a straight central portion 15. A block 16 is mounted on the straight portions, made of rubber, to keep the tub from being scratched. The device is so shaped that the space between this block and the part 14 that is engaged by the flange of the bath tub is such that, before the device is placed in proper position on the tub, it is less than the distance between the two points on the tub to be engaged thereby. Thus when the device is moved to final position, the parts 13 will move from their outward and downward positions to almost straight, downwardly inclined positions. This obviously will cause the two side pieces 12 to be slightly moved apart. The wire yields so as to permit this, and this spreading movement of the sides provides the tension required to hold the pillow stretched straight between the side portions. Thus the device grips the tub firmly, and at the same time maintains the pillow securely in any position in which it may be placed. The bather can, while in a reclining posi-



tion, grasp the pillow with one hand and adjust it up or down on the frame, so as to make it comfortable for his head. It is an obvious advantage to be able to do this without manipulating bolts or the like. The device is of the simplest, but will be found durable and practical.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

HANDY THINGS CO. et al. v. TUCKER & DORSEY MFG. CO.

(Circuit Court of Appeals, Seventh Circuit. Jan. 10, 1911. 188 F. R. p. 68.)

PATENTS—PRIOR PUBLIC USE—VEGETABLE AND FRUIT SLICE AND SLICER.

The Regnier patents, No. 678,514, for a vegetable or fruit slice and method of making the same, the slice being corrugated on both sides in such manner that numerous perforations are made without waste of material, aad No. 744,107, for a slicer to produce such slices, are both void for prior public use for more than two years prior to the applications.

COMMERCIAL ACETYLENE CO. et al. v. SEARCHLIGHT GAS CO. et al.

(Circuit Court, N. D. Illinois, E. D. April 25, 1911. 188 F. R. p. 85.)

1. PATENTS—TERM-LIMITATION BY FOREIGN PATENT.

In determining whether the invention of a United States patentee was previously patented in a foreign country withiu the meaning of Rev. St. § 4887 (U. S Comp. St. 1901, p. 3382), so that its term is limited by such foreign patent, the court must look through the mere form of phraseology and determine what was the essence of the invention laid open to the public by the foreign patent.

2. PATENT — TERM — FOREIGN PATENT—ACETYLENE TANKS.

The Claude and Hess patent, No. 664,383, for an improvement in apparatus for storing and distribnting acetylene gas, is limited as to term by the British patent No. 29,750 of 1896, granted to the same inventors for an improved method of storing acetylene for lighting and other purposes, and which expired by limitation June 30, 1910.

COMMERCIAL ACETYLENE CO. et al. v. ACME ACETYLENE APPLIANCE CO. et al.

(Circuit Court, E. D. Michigan, S D. April 26, 1911. On Motion for Rehearing, May 11, 1911. 188 F. R. p. 89.)

1. PATENTS — VALIDITY —ABANDONMENT—METHOD AND APPARATUS APPLICATIONS.

A method and the apparatus for practicing such method are distinct things. and may be the subjects of separate inventions and covered by separate patents: and, where separate applications are made for each by the same inventor, his withdrawal or abandonment of one does not affect the validity of a patent granted for the other.

2. PATENTS— VALIDITY — INVENTION PREVIOUSLY PATENTED IN FOREIGN COUNTRY.

A foreign patent for a method is not for the same invention as an application for a United States patent for an apparatus for practicing that method so as to bring the case within Rev. St. § 4887 (U. S. Comp St. 1901. p. 3382), and invalidate a patent granted on such application.

3. PATENTS — SUITS FOR INFRINGEMENT—PRELIMINARY INJUNCTION — SECURITY ON GRANTING.

On the granting of a preliminary injunction against infringement of a patent which will necessarily close down a business being established by defendant with good prospects, the actual damages which will result if the injunction is erroneously issued will necessarily be incapable of even approximate ascertainment, and the ordinary bond for payment of such damages will afford inadequate protection, and in such case it should be conditioned for the payment of a fixed sum estimated by the court as the fair value of the business to be destroyed.

SHREDDED WHEAT CO. v. WILLIAMS BISCUIT CO. et al.

(Circuit Court, N. D. Illinois, E. D. March 8, 1911. 188 F. R. p. 213.)

1. PATENTS—VALIDITY AND INFRINGEMENT — MACHINE FOR MAKING SHREDDED WHEAT.

The Perky & Ford patent, No. 502,398, for a machine for the preparation of cereals for food, the novel feature of which is the combination with a pair of compressing rolls, one or both of which are grooved. of a comb-like scraper, the teeth of which are arranged to fit said grooves and the spaces between the teeth to fit the cylindrical faces of the rolls between the grooves, discloses a true combination and invention. Claims 1 and 2 also held infringed.

2. PATENTS — SUIT FOR INFRINGEMENT — PARTIES.

Where one man conceived, built up, patented in part, and managed the business of a corporation, he may properly be joined with it in a suit for infringement of a pateut in the conduct of such business.

AMERICAN STOKER CO. v. UNDERFEED CO. OF AMERICA et al.

(Circuit Court of Appeals, Third Circuit. June 12, 1911. 188 F. R. p. 314.)

PATENTS — INFRINGEMENT — UNDERFEED FURNACE.

The Garden patent, No. 648,251, for an underfeed furnace, is of narrow scope and is not infringed by the furnace of the Daley patent, No 644,664, which, although it employs the single novel feature of the Garden patent, employs a different combination of elements to accomplish a different purpose.

UNION CARBIDE CO. v. AMERICAN CARBOLITE CO.

(Circuit Court, N. D. Illinois, E. D. March 8, 1911. 188 F. R. p. 332.)

1. PATENTS—CONSTRUCTION AND INFRINGEMENT — "CRYSTALLINE CALCIUM CARBIDE."

The Willson patent, No. 541,138, for a "crystalline calcium carbide, existing as masses of aggregate crystals," held, on a motion for a preliminary injunction, to cover calcium carbide existing as a mass of crystal grains, devoid of their characteristic forms and closely packed together, termed a "crystalline aggregate," if not crystalline calcium carbide in any form, and an injunction granted.

2. WORDS AND PHRASES—"AMORPHOUS"

Calcium Carbide in an "amorphous" condition is without definite form, as uncrystallized.

AMERICAN GRAPHOPHONE CO. v. VICTOR TALKING MACH. CO. et al.

(Circuit Court D. New Jersey. Jan. 3, 1911. 188 F. R. p. 431.)

1. PATENTS — SUIT FOR INFRINGEMENT—EFFECT OF LICENSE.

A license under a patent for a stated term cannot be terminated before the expiration of such term except by mutual agreement of the parties or the adjudication of a court, and the licensor cannot by himself declaring a forfeiture, maintain a suit under the patent laws for infringement against the licensee.

2. PATENTS--LICENSE—REVOCATION.

Where a contract provides for an exchange of licenses to manufacture under specified patents severally owned by the respective parties, the consideration being such mutual agreements, one party cannot elect to abrogate or rescind it with respect to a single license while retaining it in effect as to the others.

WALKER PATENT PIVOTED BIN CO. v. BERNARD GLOEKLER CO.

(Circuit Court, W. D. Pennsylvania. Aug. 3, 1999. 188 F. R. p. 435.)

1. PATENTS—INFRINGEMENT—TILTING BIN.

The Walker patent, 614,279, for a tilting bin, held valid and infringed on a motion for preliminary injunction.

2. PATENTS—SUIT FOR INFRINGEMENT—PRELIMINARY INJUNCTION.

Where a patent has been sustained on final hearing by a Circuit Court and also by the Circuit Court of Appeals, a preliminary injunction against its infringement should not ordinarily be denied by another court in the same circuit on affidavits attacking its validity.

LEACH v. SCARFF.

(Circuit Court, N. D. Illinois, E. D. Aug. 4, 1911. 188 F. R. p. 466.)

TRADE-MARKS AND TRADE-NAMES — INFRINGEMENT—RIGHT TO RELIEF.

Complainant is not entitled to enjoin use by a competitor of such names as "Oil of Pine," "Virgiu Oil of Pine (Pure)," or "Virgin Oil of Pine Compound (Pure)," though complainant's use of the names is original and fanciful as applied to his compound, where he is in the position of either perpetrating a fraud on the public by falsely claiming the presence of oil of pine as an ingredient, or claiming a trade-name in a mere proper pharmacentical designation of the drug he seeks to protect.

JOHN KITCHEN, JR. CO. v. LEVISON.

(Circuit Court of Appeals, Ninth Circuit July 3, 1911. 188 F. R. p. 658.

1. PATENTS—VALIDITY AND INFRINGEMENT —MANIFOLD BOOK.

The Levison reissue patent, No. 12,005 (original No. 694,103), for a manifold book, discloses patentable invention, especially in view of the recognized defects in the devices of the prior art which were remedied in that of the patent and its commercial success, and is also valid as against the claim that the reissue is a departure from the original. Also, held infringed.

2. PATENTS—REISSUES — PRESUMPTION OF REGULARITY OF PROCEEDINGS.

From the reissue of a patent it is to be presumed that the law was complied with, and the proceedings can only be impeached for fraud.

3 PATENTS — INFRINGEMENT — LEAVES "BOUND" IN BOOK.

A manifold book, in which the carbon sheets are attached to a cardboard stub having a notched edge, the teeth of which may be pressed between the staples which bind the edges of the leaves together to hold the sheets in place, although such sheets are removable, does not escape infringement of a patent because the sheets are described therein as "bound" in the book.

GENEVA MFG. CO. et al. v. NATIONAL FURNITURE CO. et al.

(Circuit Court, N. D. Illinois March 27, 1911. 188 F. R. p. 662.)

1. PATENTS—SUIT FOR INFRINGEMENT-CONSTRUCTION OF BILL.

Where the complainants in a suit for infringement explicitly state in their bill that all infringements by defendant were since a certain date, when they became assignees of the patents in suit and rights thereunder, general allegations in an amendment that defendant has infringed at divers times since the patents were issued do not entitle complainants to prove infringements prior to the time alleged in the original bill.

2. PATENTS—REISSUES—VALIDITY.

A reissue patent issued on an application filed as soon as the patentee discovered that his original claims had inadvertently been made too broad, and which narrows them to his actual invention, is valid.

3. PATENTS—VALIDITY AND INFRINGEMENT-SOFA BEDS.

The Rolph reissue patent, No. 11,831 (original No. 585,122), the Weyer patent, No. 634,591, and the Rolph patent, 637,976, all relating to sofa beds, are valid and meritorious, but do not disclose any new principles or modes of operation, being merely combinations of old elements in a new relation by which their operation is improved. As so construed held not infringed by the structure of the Deimel patent, No. 863,365, which embodies some, but not all, of the same elements, and has a different mode of operation.

COVER v. AMERICAN THERMO-WARE CO. et al.

(Circuit Court, N. D. Illinois, E. D. April 25, 1911. 188 F. R. p. 670.)

1. PATENT — INVENTION—SUBSTITUTION OF MATERIALS.

The making of a device either in whole or in part of materials better adapted to the purpose for which it is used than materials of which those of the prior art were made, and for that reason better and cheaper, unless the mode of operation is thereby changed, does not constitute patentable invention.

2. PATENTS—VALIDITY — REISSUES — EYE-GUARD.

The Cover reissues patents, No. 12,924 (original No. 845,696) and No. 15,817 (original No. 850,997), for an eye-guard or goggle, are void (1) as reissues not based on errors in the originals arising through inadvertence, accident, or mistake, (2) as being broadened reissues applied for after the intervention of adverse rights, (3) for lack of patentable invention in view of the prior art, and (4) for anticipation by a prior publication.

POSTAL TELEGRAPH-CABLE CO. v. LIVERMORE & KNIGHT CO.

(Circuit Court D. Rhode Island. August 2, 1911. 188 F. R. p. 690.)

1. TRADE-MARKS AND TRADE-NAMES — UNLAWFUL COMPETITION — MIMICRY — DECEPTIVE IMITATION.

Where defendant, manufacturing advertising specialties, put out an envelope similar to those used by complainant telegraph company to enclose bona fide telegrams, intending that the envelopes should be used for advertising purposes, the word "Telegram," printed thereon, being used to attract attention and to distinguish the envelope, which was intended to be sent through the mail, from ordinary mail matter, but it also appearing that the momentary deception that the envelope contained a telegram was immediately dispelled on opening the envelope and seeing that it was merely an advertisement, such similitude was mimicry, rather than deceptive imitation.

2. TRADE-MARKS AND TRADE-NAMES—UNLAWFUL COMPETITION—BILL—ACTUAL INJURY—INFERENCE.

Defendant, manufacturer of advertising specialties, manufactured and sold envelopes in imitation of those used by complainant telegraph company for telegrams, intending that they should be used for advertising matter sent through the mail. Complainant sued to restrain such use, alleging that the envelopes were used to deceive the public and cause them to believe that they were the envelopes of the complainant, and that they contained messages transmitted over complainant's wires and delivered by complainant; that defendant's envelopes had been generally mistaken by the public, by the postal authorities, and especially by complainant's patrons, for the envelopes of complainant, and had induced the public and complainant's patrons to give to the envelopes that prompt and immediate attention which was usually given to telegraphic messages; and that the same would cause annoyance to complainant's patrons and an injury to complainant's business. Held that, in the use of such envelopes, if deceptive at all, the deception was merely momentary and not deceitful, complainant's claim of injury was derived entirely from inferences based on another inference, and that the facts were insufficient to establish actionable injury.

RYDER et al. v. TOWNSEND.

(Circuit Court, N. D. New York. April 1, 1911. 188 F. R. p. 792.)

1. PATENTS—VALIDITY AND INFRINGEMENT —SILO.

The Harder patent, No. 627,732, for a silo, having a continuous opening from top to bottom, claim 4, which covers broadly in combination braces between the edges of the walls forming the opening, door sections for closing the opening, and reinforcing strips for the door sections, was not anticipated, discloses invention, and is entitled to a fairly liberal construction and range of equivalents. Also held infringed.

2. PATENTS—VALIDITY—BROAD AND SPECIFIC CLAIMS.

When an inventor makes an invention and in his specification points out a specific construction and also has a general broad claim, and when this is done, in order to sustain the broader claim, it is not necessary that he should point out in his patent that the specific construction shown is not essential to the invention.

3. PATENTS—SUIT FOR INFRINGEMENT — RIGHT TO SUE USERS.

Where infringing articles are in use in the district in which the owner of the patent resides, although made elsewhere, he is not subject to criticism for exercising his legal right to sue the users in that district instead of going to the district of the manufacturer and there bringing suit against the maker.

EMERSON & NORRIS CO. v. SIMPSON BROS. CORPORATION.

SAME v. STRUCTURAL CEMENT STONE CO.

(Circuit Court, D. Massachusetts. June 5, 1911. 188 F. R. p. 808.)

PATENTS—ANTICIPATION-PROCESS OF MAKING ARTIFICAL STONE.

The Stevens patent, No. 624,563, for a process of making artificial stone by the use of sand molds for drawing the surplus water from the stone compound by absorption, is void for anticipation by the prior public use of substantially the same process by one Berthelet for two years or more in the ordinary course of his business of making artificial stone.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Otto Wunder, Ellicott City, Md. Raking Mechanism for Dams and Other Water Channels.—The function of the present invention is primarily to separate or break into small pieces large masses of packed river mud, timber, leaves, etc., which have accumulated over the openings of ducts or channels in hydraulic dams, mill races, or other like situations where this detritus would otherwise obstruct the free passage of water through the channel, or if sufficiently small in size, would be forced through the strainer grating and carried into turbines, chambers, water wheels, or the compartments of water power machinery, protected by the strainer grating. The mechanism consists of an endless rake having a path of movement parallel to the bars of the strainer grating and provided with teeth projecting through the bars and engaging the material held against the same.

George W. Whitcomb, Duff, Nebr. Automatic Vehicle Brake.—It is the aim of the present invention to provide a gravity acting vehicle brake, adapted to be automatically applied when the vehicle descends an incline, and capable of positively relieving the vehicle wheels of the brake shoes when the vehicle assumes a level or horizontal position. The automatic vehicle brake, which may be applied to a vehicle without necessitating any alteration in the construction thereof, includes an inclined casing, plungers operating at the ends of the casing, and a reciprocatory weight guided in the casing and arranged to actuate the plungers for moving the brake shoes into and out of engagement with the wheels.

Frederick Metcalfe, Greenville, Miss. Cotton Chopper.—This invention is designed for chopping or blocking cotton, beets, corn and other drilled vegetation requiring early cutting, and its object is to provide a cotton chopper equipped with a transverely disposed rotary cutter having a curved blade adapted to cut beneath the surface of the soil, and at the same time utilize the forward movement of the machine to produce a shear cut in severing the plants. The machine is provided with front and rear flexibly connected frames; the front frame, which is mounted upon wheels, constitutes a rigid support for soil engaging devices, such as harrow teeth, to enable the same to run at a uniform depth; and the rear frame, upon which the rotary cutter is mounted, is yieldably supported on resilient runners.

Franklin C. Miller, Easton, Pa. Two patents.—The first invention relates to an automobile controller lever lock, and has for its principal object the provision of a locking means which is combined with the latch device of the controller so that the latter can be locked in operative position to enable the owner of the automobile to leave the same with perfect safety without liability of the car being taken away by a thief or any unauthorized person, or the car started by mischievous persons, the lock being of such a nature as to be opened or closed by a key which the owner alone possesses. This result is accomplished by means of a combined lock and push button, which is associated with the controller in such a manner that the push button can be used in normal operation in shifting the controller in the working of the automobile, but which can be thrown to inoperative position when it is desired to lock the controller out of use.

The invention of the second patent is an improvement on the first, the improvement consisting in reducing the number of the parts and arranging the construction so that the device is made more effective in operation. One of the improvements consists in having a single spring serve the double function of retaining the holding means in engagement with the locking sector, and also projecting the push button into its normal position beyond the outer end of the handle, where it may be readily engaged by the thumb of the chauffeur in the operation of the device. The devices of these two patents are now in successful operation and bid fair to come into general use.

William B. Crossland, De Soto, Mo. Electric Switch for Incandescent Lamp Circuits.—The invention relates to that type of switches which after being set in motion will automatically cut resistance into or out of circuit so as to gradually bring the current up to normal voltage or gradually reduce it to zero. The object of the invention is to provide a novel switch of this type, whereby the full voltage of the lighting circuit cannot be suddenly imposed upon the lamp, but, on the contrary, the voltage is gradually brought up to normal to thereby permit the filaments of the lamp to more or less slowly heat, with the result that the life of the filament and the brilliancy thereof are maintained to the greatest possible extent. By this construction the jerking movement or the vibration of the filaments is avoided. This result is achieved by providing a vessel adapted to hold a current conducting liquid, together with a movable switch element and retarding device, which is adapted to move into and out of the liquid, and comprising a hollow structure open at its top and having a restricted opening in its bottom to permit the liquid to pass into and out of the structure as the same moves into and out of the vessel, and a weight which is inactive during the submerging movement of the conductor and is operatively connected with the latter to withdraw it from the liquid, automatically to open the switch.

George Kelly, Hinsdale, Illinois. Two patents.—The object of the first invention is to provide a simple yet practical saw filing attachment of inexpensive construction designed for use with various kinds of saws, either straight or circular, and of so simple a character as to be conveniently carried in the tool-kit of a carpenter or other mechanic, and designed to be readily applied to a saw so as to afford a guide for a file and a protector and guard for the saw, to enable the latter to be readily and accurately sharpened without liability of filing the wrong tooth. The device consists of a plate composed of two sides spaced apart to receive a saw blade between them and embrace the saw teeth, said plate being provided along its outer edges with a plurality of alternately spaced guards and recesses, the guards covering each alternate tooth of the saw so as to expose the remaining teeth at the recesses. After one set of teeth have been sharpened, the device may be shifted so as to expose the unsharpened teeth.

The second patent relates to a flexible vulcanized fibre board and a process of preparing the same. The ordinary fibre board is made of cotton flax or paper fibre, chemically dissolved and solidified under great pressure. The article itself is hard and inflexible, and owing to its inflexibility its field of usefulness is limited. The object of this invention is to make the ordinary vulcanized fibre board soft and flexible in order to increase its usefulness and its adaptability to other purposes. In this way, the fibre can be used for upholstering material, chair seats, valises, belts, etc., and will take the place of leather in the various manufactures and arts. The process consists in immersing the fibre in a relatively weak solution of glycerine and water for a predetermined period, removing the fibre from the solution, extracting the water from the fiber, and repeating the foregoing steps with stronger solutions of water and glycerine, whereby the evaporation of the water leaves the glycerine as a permanent softening agent within the fibre.

Charles F. Harris, Altoona, Penna. Attachment for Locomotive Boilers. Two patents.—The object of the invention is to provide means for producing more complete combustion in a locomotive or other boiler, and thereby reduce or entirely eliminate smoke. A very simple and compact structure is provided, which can be readily applied to any type of locomotive, the parts being such that they are not exposed to high temperature and consequently will not burn out. The invention consists of a boiler having a furnace and a stack, an engine having exhaust mechanism that delivers into the stack, means for directing drafts into the furnace, and means separate from the exhaust mechanism and automatically operated by the engine for controlling the drafts.

In the second patent, the invention relates to means whereby air may be forced into the fire box of an engine above the fire and thereby produce such a heat therein as will consume the smoke and other products of combustion which would otherwise be carried up the stack. The improvement consists in providing means whereby the valve controlling the admission of air to the firebox shall be actuated from and by the valve rod of the steam chest, so that the air passing from the reservoir shall be cut off or reduced without failure, upon the throttle lever of the engine being operated to cut off the supply of steam to the same.

Adolph Neu, Tod Inlet, B. C., Can. Fuel-Feeding Means for Cement Kilns.—One of the objects of the invention is to provide a novel system by which more perfect combustion is secured, thus effecting a material saving in fuel and also permitting the employment of a lower grade of fuel, said system being moreover less wearing upon the lining of the kiln at the hot zone, thereby eliminating constant renewals and the consequent necessity of shutting down the kilns. The invention comprises a kiln, separate fuel feeding devices arranged in one end of the kiln and disposed one above the other, the upper feeding device consisting of means for directing fuel and air longitudinally of the kiln in a gyratory stream, and the lower feeding device consisting of means for delivering a relatively broad flat stream of fuel and air longitudinally of the kiln in close proximity to the material therein, and intercepting the stream delivered by the upper device at a point in close proximity to such material.

Oscar L. Kellett, West Plains, Mo. Hydraulic Motor for Dental Machines.—The motor is designed to be driven by a stream of water, and is to be used to operate spindles having the ordinary buffing or polishing wheels. The object of the invention is to provide a motor of exceedingly simple construction wherein there shall be no back-splashing of the water, which would act to retard the rotation of the motor, and wherein the water shall be applied to the blades of the motor at a point best suited to secure its maximum energy. The invention further aims to provide means whereby escape of water is prevented from the bearings of the motorshaft, and also whereby the bearings may be tightened upon the shaft. The invention consists of a casing having opposed inlet and outlet openings, a wheel located in said casing below the inlet opening, the axis of the outlet opening of the casing being in line with one face of the wheel, said opening being laterally larger than the width of the wheel and extending beneath the same but having its axis offset to the vertical plane of the wheel.

Alfred Hines, Rufus, Oregon. Three patents.—The invention of the first patent relates to a draft equalizer, designed for use where teams of from twenty to thirty horses are employed, as for instance, in connection with large agricultural and farming apparatus known as traveling reapers, and the object is to provide a novel combination of parts in which the teams can be placed close to the load and the work of each team and individual horse is equalized and adjusted. Means are also provided whereby the different equalizers of a set can be made longer than is ordinarily the case, to take advantage of the well known fact that long equalizers are better than short ones.

The second patent also relates to a draft equalizing device and is designed for use with a team of twenty horses. It consists of a support adapted to be slidably mounted on the front end of a tongue, a pulley mounted on the support, a rope passing around the pulley and extending rearwardly along opposite sides of, but free from the tongue, and adapted to be attached at its extremities to the rear draft device, the length of the rope between either end and the point of engagement with the pulley being such that the rope prevents the support from passing over the end of the tongue, and a device on the movable support for connecting the same with a front draft device.

The third patent relates to a traveling reaper and thresher, and the principal object is to provide an apparatus of this type equipped with automatically operated leveling means whereby the thresher will be maintained level irrespective of the changes in the contour of the field over which the machine is traveling. The invention consists of a reaping mechanism, a body frame, a thresher disposed above the latter, a supplemental frame disposed under the thresher, a pivotal connection between the body frame and the supplemental frame located under the thresher, a single supporting wheel disposed in line with the said pivotal connection, a leveling device disposed above the thresher, means located in the plane of rotation of the said wheel for automatically connecting the leveling device with the top of the thresher, and automatically-operated mechanism for actuating the said device.

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FOR SALE outright or state rights—Patent No. 964,823, dated July 19, 1910. One horse hay press. Powerful and rapid. Simple construction and good profit. Address, patentee and owner. W. R. Taylor, Winnsboro, La. apr

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FOR SALE—Patent No. 1,002,164. Portable Power Cut-off Saw. For felling trees and sawing the trunks into blocks. Price low. Property in exchange and royalties considered. Address, W. C. Lipscomb, Crockett, Texas. mar

FOR SALE—Patent No. 984,903. Gas Hose Clamp and Holder. Prevents the hose from coming loose, leaking and breaking. Sample ten cents. Address, A. and G. Gradel, 818 John St., West Hoboken, N. J. mar

FOR SALE—U. S. Patent No. 1,002,155, dated Aug. 29, 1911. Up-to-date automatic wagon brake. Will sell reasonably. For further particulars and drawings, apply John P. Jensen, Foley Brook, New Brunswick, Canada. mar

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FOR SALE outright—U. S. Patent No. 1,004,655, dated October 3, 1911. Corn Planter Wheel. An open wheel with detachable concave tire. Two kinds of wheels in one. Address, S. P. Johnson, West Point, Nebr. mar

FOR SALE—Patent No. 1,006,364, issued Oct. 17, 1911. What am I offered for absolute non-derailable car and a track having a crossing and automatic switch? Worth a million. On royalty five cents per mile. Address, I. M. De Pew, Palma Sola, Florida. mar

FOR SALE—Patent No. 1,006,337, dated Oct. 17, 1911, Folding scaffold to be applied to windows. Constructed entirely of round metal bars. For use by painters, window-cleaners, etc. Address, Ernest Zahn, 22 Magnolia Avenue, Norwalk, Connecticut. mar

FOR SALE—Patent No. 1,006,266. Railway Cross Tie, made of steel strips. Simple and inexpensive to manufacture. The best tie ever invented. Patents in the United States, Canada and Mexico. Address, V. L. Miller, Miller, Wyoming. mar

FOR SALE—Patent No. 976,988, dated Nov. 27, 1910. Wave Motor. Strongest and cheapest in the world. Will generate electricity at a minimum expense. Sure to pay a large income to promotors. Wish to sell outright. Apply to Benjamin Cutler, Crawfordsville, Oregon. feb

FOR SALE—U. S. Patent No. 999,406, dated Aug. 1, 1911. Sack Holder. Will sell outright or on royalty. Address, Charles C. Skelton, Butler, Indiana. feb

FOR SALE—U. S. Patent No. 1,002,557. Fluid Gage. The simplest and cheapest to manufacture. Invention intended for autos. Can be used in the opening for filling the tank. Address, James H. Birchard, Box 229, Kenosha, Wisc. feb

FOR SALE—Patent No. 992,719, dated May 16, 1911. Spring Wheel for Automobiles. No danger of puncture: is very practical and cheap to make. Will sell for moderate price. Address, Grant Leeper, 514 South Church St., Visalia, California. feb

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FOR SALE—Patent No. 1,004,775. Foot-rest for registers and radiators. Cash or royalty. Address, Margaret B. Goodwin, 210 East 4th Ave., Denver, Colorado. mar

WANTED.

WANTED—A company to manufacture my massage instrument on royalty. Body part which holds tonics, plated silver, with perforated lid, over which is a lid of studded rubber, also perforated. Handle of wood. Only instrument that applies tonics and does the massaging. Patent No. 1,007,879, granted Nov. 7, 1911. Address, Daisy Lee, 1240 Emerald Ave., Chicago Heights, Ill. apr

WANTED—To correspond with manufacturers regarding the manufacture and placing on the market of a meritorious and useful celluloid article having practically an unlimited field for its operation. Address, P. O. Box 355, Wilber, Nebr. apr

WANTED a Company in the U. S. to manufacture my saw-fitting device, patent No. 972,789, dated Oct. 10, 1910. Also a company in Canada to manufacture same device, Canadian Patent No. 124,345, dated March 8, 1910. I will sell either or both of said patents. Address, C. R. Pierce, Rainier, Washington. feb

WANTED—Not for sale but want a company to manufacture my manure loader on royalty, Patent No. 918,695. Address, Lars C. Peterson, Osage City, Kansas. feb

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WASHINGTON, D. C., FEBRUARY 1, 1912.

PROPOSED DECREASE OF FEES IN DESIGN CASES.

There is a bill before Congress (H. R. 1654), which is entitled to special mention. It aims to decrease the fees in design cases. It is as follows:—

> "In design cases: For three years and six months, five dollars: for seven years, seven dollars and fifty cents: for fourteen years, fifteen dollars."

If this bill passes it will reduce by one-half the present government charges for design patents. which for three years and six months are now ten dollars, seven years, fifteen dollars, and fourteen years, thirty dollars. It will no doubt have the effect of increasing the number of design patents applied for, and we hope it will pass.

We do not expect that there will ever be a return to the practice of granting design patents on such things as horseshoe calks, but there are many manufactured articles having novel shapes which should be made the subject of design patents. Indeed there are many inventions which can be protected by both a design patent and a mechanical patent. Wherever this is the case both patents should be applied for, for the two patents would tend to supplement each other.

For instance, we can imagine an improved cuspidor having a novel shape on which the Patent Office would grant a design patent to protect the configuration. The cuspidor might also have a peculiar mechanical construction on which a mechanical patent could be secured. Thus the mechanical patent would cover the peculiar construction of the cuspidor, while the design patent would protect its shape irrespective of its construction. Its shape might ultimately prove of great value, particularly so if the claim for the mechanical patent should be a limited one. Indeed, we have in mind cases in which if a design patent had been applied for at the same time that the mechanical application was made, the patentee would be in a better position today.

We are gratified with the prospect for a change in the fees for design patents, and hope to be able to report before the present session of Congress is over that the law has been enacted.

THE DECISION IN THE GRANT TIRE PATENT.

In the INVENTIVE AGE for September, we commented on an article appearing in another magazine, wherein the writer attempted to define what is an invention, and reference was made to the fact that the decisions of the Supreme Court of the United States bore out the opinion of the writer. The recent decision of that tribunal on the Grant tire patent is worthy of more than passing notice, because it sustains the writer's views.

The patent to Arthur W. Grant was issued February 18, 1906. The patent has been before the circuit courts of the United States for many years. It was sustained by several circuit courts. Because of the conflict between the lower courts. a writ of certiorari was issued by the Supreme Court of the United States, and the matter was certified to that tribunal for decision. This is always the case whenever there is a conflict between the lower courts on the question of the validity of a patent.

It was conceded that the claims of the patent were quite narrow, counsel admitting that they were limited closely to the specific construction of the Grant tire as it is actually shown and described in the patent. The only reference against the patent was an English patent, and it was attempted to combine certain figures appearing in the English patent, which appeared to show all the elements disclosed in the Grant patent, though arranged somewhat differently. Notwithstanding this fact, the court sustained the validity of the patent, and its opinion is so cogent and pertinent that we have deemed it of sufficient importance to quote a portion of the same.

"The tire has utility, a utility that has secured an almost universal acceptance and employment of it, as will subsequently appear. It was certainly not an exact repetition of the prior art. It attained an end not attained by anything in the prior art, and has been accepted as the termination of the struggle for a completely successful tire. It possesses such amount of change from the prior art as to have received the approval of the Patent Office, and is entitled to the presumption of invention which attaches to a patent. Its simplicity should not blind us as to its character. Many things, and the patent law abounds in illustrations, seem obvious after they have been done, and, 'in the light of the accomplished result,' it is often a matter of wonder how they so long 'eluded the search of the discoverer and set at defiance the speculations of inventive genius.' Knowledge after the event is always easy, and problems once solved present no difficulties, indeed, may be represented as never having any, and expert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by merely skilful attention. But the law has other tests of the invention than subtle conjectures of what might have been seen and yet was not. It regards a change as evidence of novelty, the acceptance and utility of change as a further evidence, even as demonstration."

Nothing better than this has ever appeared in any decision that we are acquainted with. If the Patent Office in its actions upon applications for patents were guided by the principles of this decision, many meritorious devices on which patents are refused would be allowed. It is a pity that the liberal provisions of this decision are not followed by the Federal courts generally. We have seen, too often, instances where the lower courts have ruled unfavorably against patents on purely technical grounds. We have seen that in many instances the courts were prejudiced against patents, and that there is such a prejudice is well known.

It is unfortunate that the opinion of the Supreme Court cannot be invoked more often in patent cases. Under the present practice a case can only reach the Supreme Court when there is a diversity of opinion in the lower courts about the patent involved. The patent profession needs a few more such decisions from the Supreme Court which will serve to brighten up the situation and liberalize the practice of some of the lower patent tribunals.

A PATENT BAR URGENTLY NEEDED.

In the report of the Commissioner of Patents which was discussed in our last issue of the AGE, appears the following recommendation:—

"I desire to invite attention to the necessity for legislation which would result in the establishment of a patent bar. It is strongly urged that a law be enacted which will provide that before an individual shall be permitted to practice before the United States Patent Office he be required to pass an examination as to his moral, legal, and technical qualifications; that a committee be appointed by the Commissioner of Patents, composed of officials in the Patent Office and patent attorneys of well-known standing in the profession, who shall conduct the examination under the Commissioner's supervision, the report of such committee to be subject to his approval.

"Authority should be given by such legislation to an appropriate committee to regulate the advertising by attorneys practicing before the Patent Office, and also from time to time to pass upon all complaints of improper advertising and other matters which are considered outside of professional ethics. Such a bill was drafted and submitted to your predecessor, but apparently was overlooked and not forwarded to Congress. A redraft will be prepared and presented for your approval in a short time."

We heartily endorse this proposal, and sincerely hope a law will be enacted along the lines indicated. It would do more than anything else to raise the standard of patent attorneys, and be a great protection to inventors. It would probably not serve to get rid of some of the attorneys whose work has been a source of complaint, but it would curtail their operations by compelling them to revise their advertising methods.

It is a well known fact that there are attorneys practicing before the Patent Office who could not write a specification of a patent application, or amend an application, or write an opinion bearing upon a patent, or interpret a claim of a patent if they were called upon to do so. We know of several attorneys whose chief work in their offices is to open the mail, extracting the checks, drafts, and money orders and banking them. It is the only time they ever get in touch with the inventor. They see the money come in, but they never see the inventor's invention. That is passed along for more competent ones to handle. In most cases they have competent men working for them, but the subordinates get comparatively small salaries, while the men who are incompetent as patent lawyers rake in thousands of dollars yearly.

We know of no business in which incompetence can achieve such a reward as that of patent soliciting. A man to make a success as a merchant must have certain well-defined traits of character, and be a good salesman. He must have something more than capital at his command.

A doctor must study medicine, pass an examination, and be skillful in the handling of his patients. No amount of advertising for the doctor will do him any good professionally. On the contrary, it will depreciate him in the eyes of his patients.

A civil lawyer usually attends law school, then takes an examination and is admitted to the bar, and after many years plodding, finally achieves success. He can not rise through the work of some one else, but he must win success by his own efforts. He cannot employ other lawyers to make for him a reputation.

We might continue these illustrations ad infinitum, but the same conclusion would be reached in each instance, that to accomplish success in any line of work a man must understand the business thoroughly, and the better he understands it and the harder he works the more success he will achieve.

A successful (?) patent solicitor need not go through this course of training. All that he has to do is to conceive of some advertising scheme to place his name before the public, and the inventors will do the rest. He may either advertise "Lists of Inventions Wanted," or inflame the mind of the poor inventor with the thought that "ideas" are wanted, and that

there are "millions in ideas," and the shekels will roll in.

Many people thought that after the disbarment of John Wedderburn & Co. in 1897, the patent soliciting business would stand upon a different plane. If the principles enunciated in that decision had been carried out in the Patent Office and strictly enforced, the practice of soliciting patents would not have fallen into the disfavor that exists today. There is a real and urgent demand for an improvement in the present conditions. The registration of attorneys, which was adopted after the Wedderburn episode, has been of no particular service either to the Patent Office or to inventors. If there had been any care or discrimination exercised in registering attorneys it would have been different. Instead of that, few people who have applied for registration have been turned down, and the term "registered attorney," which was intended to add dignity to the profession, is practically a by-word.

The creation of a patent bar requiring each individual attorney to pass an examination as to his moral, legal and technical qualifications would, if properly enforced, weed out many disreputable atttorneys and those whose chief claim for success lies in their ability to think of new schemes for advertising, and whose time is wholly occupied in such efforts, rather than in seeking to promote the interests of their clients.

Apart from the demand for a new building, there is nothing contained in the Commissioner's report which demands more immediate attention than this recommendation for the creation of a patent bar. In the past, we have had instances of a real estate agent, a whiskey dealer, a clerk of the war department, and a draftsman entering the patent business with little knowledge of what a patent was, and by the exercise of shrewd business methods and the use of clever advertising schemes, succeeding in building up businesses of great magnitude. If they had been required in the first instance to pass an examination, they would never have been admitted.

We know from experience that those attorneys who transact a large miscellaneous business cannot serve the interests of an inventor as well as an attorney whose business is not large and who can exercise personal supervision over the same. If the inventors of this country knew how important it is to them to create a patent bar, they would demand it so strongly that the legislation would be passed during the present session of Congress. It cannot come too soon.

To keep themselves posted in the progress of the arts in which they are interested, inventors and manufacturers should subscribe for the INVENTIVE AGE, which publishes a list of all patents issued each month. The low subscription price and the character of the publication entitle it to the support of all the inventors of the country.

Automatic Letter Registry.

Penny in the slot machines for the sale of postage stamps have met with approval, and now an automatic machine has been devised which registers letters. When two nickels are inserted a door opens and shows an aperture in which the letter is to be inserted. On the turn of a handle the letter, duly registered and numbered, is thrown out at the side, while the receipt is returned from the front of the machine.

Incandescent Oil Lamp.

The use of the Welsbach mantle on kerosene lamps is one of the latest novelties. The lamp has a tubular wick which conducts the oil from the reservoir, but the illumination is not produced by burning the oil directly. Instead, the oil is turned into vapor and mingled with air in such proportions as to produce a non-luminous, heating flame, and this in turn heats the Welsbach mantle to incandescence. After a test of two months, the lamp is reported practicable for general use. It is claimed that it gives several times as much light as the ordinary oil lamp, on half the consumption. It emits very little heat.

Electric Gun.

A practical electric gun has recently been tried in England, and its success is such that it is likely it will be adopted in the near future. The weapon is simple. It consists of a plain brass tube, open at each end. Over the tube a number of coils of copper wire are placed, the wire being wound on bobbins and the coils slipped on separately with the end of each coil projecting from the end of the bobbin. One set of ends of these coils, of similar polarity, is fastened together and led to a switchboard, where they are attached to a metallic brush. The other ends are separately led to the switchboard, each being fastened to adjacent pieces of contact metal lying flat on the board. In the circuit at a convenient point is the source of an electric current.

If the metallic brush be now drawn rapidly across the face of the metallic segments, increasing in speed as it progresses, the current is passed through each of the successive coils at a correspondingly increased speed. The shot, which is of cast iron and fits easily into the tube, is inserted at the lower end. It is at once drawn forward by the first coil, then caught up by the second, and so on, advancing toward the muzzle at an ever increasing speed until it leaves the barrel and starts on its deadly errand. For heavy guns, some slight modifications of the arrangements would have to be made, but it will be seen that the idea is about as simple as could well be imagined.

If the gun does all that is claimed for it, the advantages of its adoption are clear. The cost would be small, consisting almost exclusively of the copper coils and the battery. As to the expense of operation, it is calculated that a large battery of guns could be worked continuously for an hour at a cost of $15, compared with $300 which it now amounts to for a 6.7 inch gun. The electric gun will be about half as long, will weigh less, and will discharge its missile with a velocity of almost as high again as the ordinary gun. It is quite noiseless, there being no flash and no smoke, so that it would be impossible for a ship to discover the position of a hidden battery. It also has no recoil, so that it could be mounted on a small ship with no danger of the vessel going astern as the charge is fired. Furthermore, as the projectile travels down the center of the tube and is not in contact with its sides, there is no friction. The barrel does not become heated, and the gun can be fired continuously for an indefinite length of time. It is also capable of throwing projectiles containing powerful explosives. On account of the shock of the explosion, only such explosives as lyddite are now employed, and these are little stronger than ordinary powder. With the electric gun there is no trouble about this, as the missile commences to move slowly and increases in speed gradually until it leaves the gun gently and without shock. The caliber of the gun can be increased to any reasonable size, and coupled with the use of dynamite, this would enable the present costly armor-piercing shells to be done away with; for while the efficacy of these shells depends entirely on the liability of the shell to penetrate the armor first, dynamite would expend its whole force against the ship's side, tearing it open. It is not certain, indeed, that armor would not be utterly useless if the electric gun does all that is expected of it.

Automatic Telephone

Will the telephone of the future be entirely self operative? Will we dispense with the operator and be able to converse without the interposition of Central? It is believed that these questions can be answered in the affirmative. Several systems are known to the telephone world by which, without any human intervention whatever, electrical apparatus will select a certain subscriber, connect him and sever him when he again hangs up the receiver. So far, the expense of operating these systems has prevented their commercial adoption. By one method, a signalling device, consisting of a dial which is moved once for each digit, is given to each subscriber. By another, (which retains a very few operators) calls are made as they are at present, but by means of a dial, operated like the keyboard of a typewriter, the operator sets up the demand, for her own or another exchange, and the machine does the rest. In one or another of these forms, automatic apparatus will shortly be introduced. In large districts it will effect a vast saving of first cost, operating speed and maintenance. It will give speedier connection and speedier severance, the latter involving economy of junction lines which connect exchanges; and it will satisfy many people who still hold the conviction that operators have nothing else to do than to eavesdrop their private conversations.

Another improvement in telephones is a device for recording the talk, so that it can be used for the definite settling of important affairs. In addition to the ordinary receiver there is provided another instrument, the mouthpiece of which terminates in a flexible tube connected with the mica plate of a phonograph membrane, the two membranes thus being separated by a small enclosed mass of air. All the vibrations of the telephone membrane are faithfully transmitted to the phonograph membrane, and inscribed in the wax of the cylinder. By displacing a small lever, the person listening to the telephone talk can at any moment start the mechanism of the phonograph, so that either the whole or part of the conversation can be recorded. If the recording membrane be replaced by a reproducing membrane and sound funnel, the phonographic reproduction of the telephone communication can be insured at any time, at any place, quite distinctly and with the same pitch as the original talk.

This apparatus thus allows telephone communication to be endowed with the same official character as that possessed by a record in writing. It also makes it feasible to leave word for telephone subscribers happening to be absent, and to dispatch news in the form of inscribed phonograph cylinders, the records of which can be transmitted from the phone exchange to any subscriber. Moreover, it would seem to be adapted to a long distance dictaphone, enabling the dictation of correspondence over telephone lines. It will be found preferable in many cases to telegrams, permitting the transmission, instead of conventional signs, of the characteristic picture of the correspondent's voice. It also allows dispatches to be kept a secret, without the aid of any code. An additional advantage over ordinary phones is the possibility of causing the machine to repeat as often as may be wished, any telephone talk heard only imperfectly.

Illustrated Songs.

A new attachment for the phonograph is a device which illustrates the text of songs as they are sung, by projecting lantern slide views upon a screen in front of the horn. A small electric light chamber is attached to the small end of the horn, and a disk containing the slides is placed in front of it, and moved at regular intervals by the motor of the phonograph. Thus, says *Popular Mechanics*, a popular feature of the low-priced theatres can be made a part of the home entertainment. The song record and the picture disk are sold in pairs, so that the words and illustration will harmonize. The device does not interfere with the use of non-illustrated records.

THE INVENTIVE AGE contains sound advice to inventors and patentees. For lack of such advice many have lost money. Subscription price, one dollar a year.

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Printing plate alining gage.....K. M. and F. Schlueter, Jr.
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Propeller.....G. W. Kingsbury
Propeller, Ship (Reissue)..G. A. Schlotter
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Pump, Centrifugal.....J. Wilkinson
Pump, Gas.....R. Whitaker
Pump, Oil well.....E. A. Wheeler
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Rolling mill.....A. A. K. Nowak
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Rotary cutter.....M. C. Peters
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Scale.....A. De Vilbiss, Jr.
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Screen.....N. Brandt
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Seals, Machine for applying bottle.....C. Winter
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Sharpening device.....P. E. Bird
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Shock absorber.....E. Flentje
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Sound reproducing and recording instrument.....H. G. Wieder
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Spring-wheel.....W. D. Hester
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Staff holder, Flexible.....C. D. Lynch
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Steam separator.....W. C. Mitchell
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Issued January 9, 1912.

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Irrigation apparatus.....I. L. Roddy
Jig.....G. W. Keller et al.
Journal box lid.....E. G. Busse et al.
Journal box of a car truck to the truck side frame, Means for securing the.....S. P. Bush
Junction box.....W. S. Timmis
Kiln cleaner.....L. P. Ross
Kite.....J. P. Buengers
Knife rack.....A. S. Kinsley
Ladder.....J. E. Forndran
Ladder, Fruit gatherer's and painter's....W. R. Irby
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Lamp burner and globe.....J. C. Smith
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Level rod.....F. W. Willis
Leveling device.....J. Roake
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Mail box, Letter and package....C. Ohlson
Marking pot.....C. A. Garvey
Marline spike.....J. V. Anderson
Match box.....R. Muller
Mattress.....F. F. Schmitt
Mausoleum.....T. H. Rowland
Measure, Computing.....D. H. Layne
Measure, Tailor's.....A. N. Walquist
Measuring and dispensing device.....E. P. Smith
Measuring instrument.....P. N. Killinger
Measuring the evaporation of liquids, Apparatus for.....N. H. Freeman
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Medicine to live stock, Apparatus for administering.....W. A. Holliday
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Railway track structures, Mechanism for actuating and locking the movable elements of.....H. F. Roach
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Relay, Energy.....G. Laudet et al.
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Sash balancing device.....W. Sawyer
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Sawing machine.....R. H. Martens
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Sewing machine tension.....S. A. Davis
Sharpening plowshares, Machine for.....A. C. Case
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Sheet registering device.....O. S. Beyer
Shingles, Method and apparatus for forming roofing.....J. W. Troeger
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Swimming appliance.....H. W. McLeod
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Switch point lock.....W. H. H. Weltou
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Telephone cabinet or hood.....G. W. Lancaster
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Issued January 16, 1912.

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Issued January 23, 1912.

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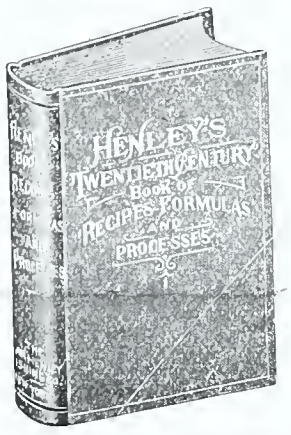
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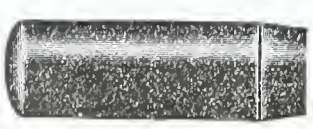
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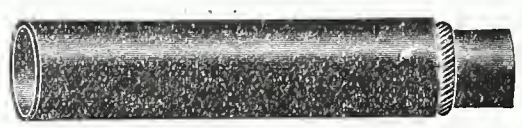
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VOL. XXIV. NO. 3. } WASHINGTON, D. C.—MARCH 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

TRACTION ENGINES PLOWING, SEEDING, AND HARROWING AT ONCE.

By FRANK C. PERKINS.

SOME remarkable outfits are shown in the accompanying illustrations for plowing, seeding and harrowing in one operation by the aid of the modern steam tractor. Fig. 1 shows an up-to-date farm engine putting in a crop on reclaimed land. This engine was built especially for the soft peat land reclaimed from the San Joaquin River, west of Stockton, California. It has main wheels 7 feet 6 inches in diameter and 6 feet wide, and auxiliary wheels of the same size. For plowing, each auxiliary wheel has a six-foot extension making a bearing surface 36 feet wide, the width of tread being 44 feet 4 inches, and width over all being 45 feet 8 inches. It is plowing, seeding and harrowing a strip 44 feet wide, and it averages over ninety acres per day.

Another method of plowing, seeding and harrowing a strip 25 feet wide by means of the modern steam traction engine is indicated in Fig. 2. The main wheels are two feet wide, with extension wheels of the same width. Stockton gang plows are used on this equipment, utilizing five gangs of six ten-inch plows, with seeder attachment and harrows behind. This outfit finishes 50 to 80 acres per day of ten hours, and can work night and day if so desired. The crew consists of four men, engineer, fireman, plow tender, and water buck, four horses also being needed.

It may be of interest to note the construction of this powerful steam engine, which has a capacity of sixty horsepower, and steam cylinders 11 x 12. The corrugated flue boiler has an oil burner and is built of marine steel of 65,000 pounds tensile strength and tested to 225 pounds cold water pressure, before being mounted on the frame. Those who have had experience with traction engines of any kind know something of the hard treatment the boilers have to undergo, and will readily understand that not only must great care be taken with the material and workmanship, but the design must be well adapted to the work they are to do. It is necessary that they produce the greatest amount of dry steam with the least quantity of fuel. Using a large amount of fuel in the case of stationary or portable engines means only a larger fuel bill, but with a traction engine the hauling of it means either more fuel stations or else taking lighter loads.

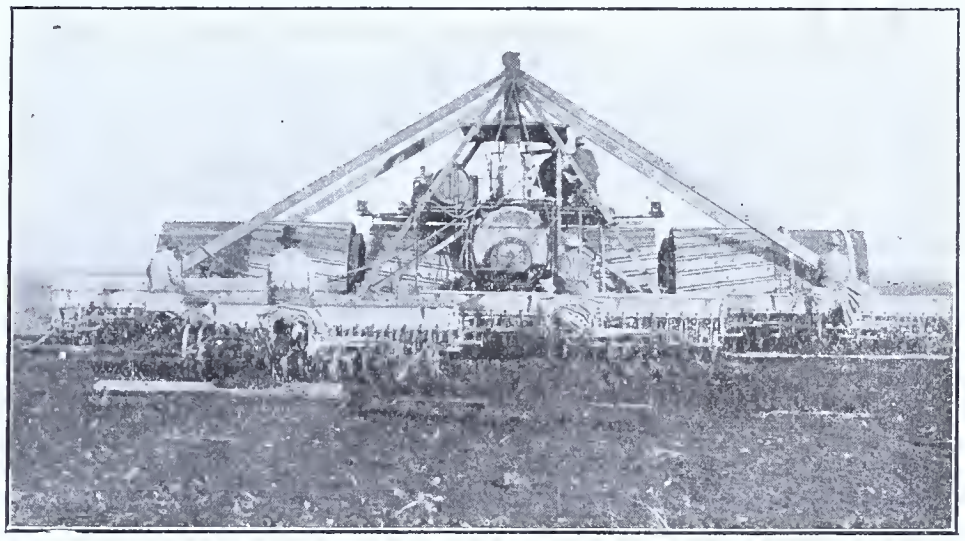


FIG. 1.—A MODERN FARM TRACTOR PLOWING, SEEDING, AND HARROWING IN ONE OPERATION.



FIG. 2.—PLOWING, SEEDING, AND HARROWING A STRIP 25 FEET WIDE.

Many engineers hold that the corrugated flue boiler is the best kind for a traction engine working under ordinary conditions. Water that is at all alkaline or otherwise undesirable for use in a boiler, attacks stay bolts and joints first of all. When the stay bolts are weakened, the strength of the boiler is an unknown quantity. A boiler then often becomes unsafe without its owner being aware of it. All other kinds of boilers require stay bolts in their construction. The corrugated flue boiler has no stay bolts at all, and the number of joints is reduced to a minimum.

The corrugated flue boiler has no flat crown sheet or horizontal tube sheet for mud or scale to collect upon, and thereby cause the rapid burning out of the sheet. On the contrary, the only place where mud and scale can collect is below the furnace on the outer shell of the boiler, which no heat ever touches. From there it is readily blown out. It is said to be the easiest kind of a boiler to clean. There is no doubt that a corrugated flue is seven times stronger, and gives ten per cent more heating surface than a straight flue. Also it is true that it is somewhat elastic and does not impose any strain on other parts of the boiler, because of expansion due to unequal heating. The water leg type of boiler is used on the larger tractors, and it is maintained that this has a much greater depth of water over the furnace and it can therefore climb much steeper grades without any portion of its furnace being out of water.

Undoubtedly the hardest thing any engine has to do is to start its load, and especially is this true of a traction engine used for plowing, seeding and harrowing in a single operation. A single engine is used to propel this traction engine, and two heavy fly wheels carry the crank over the centers. One reason for the use of the single engine is that a double engine has twice the number of working parts to be cared for. The cylinder is bolted to the bed plate in such a position that the steam chest can be opened and any of the parts in it examined without difficulty, and a "D" valve is used with an American bal-

ance valve which requires no adjusting. This valve is operated by a Woolf Valve Gear, and the number of working parts is reduced to a minimum, as there is only one eccentric. A positive feed automatic lubricator insures a sufficient amount of oil to prevent grinding in the steam chest and cylinder. It will be noted that the engine is mounted on the top of the boiler and the engineer sits beside it and can both see and hear as it works, as it is up out of the dust. It may be stated that it is the universal practice of makers of portable engines, traction engines and locomotives to fasten the engine to the boiler whenever it is possible to do so, and the reason is not hard to find. The frame is necessarily somewhat flexible; the boiler is rigid. An engine needs a rigid foundation.

There is a hand wheel in front of the engine, by which the engine can be steered by hand whenever it is desired to do so. As comparatively little weight rests upon the front wheel, which is hung in a circle guided by friction rollers, it is easily turned to any desired angle. When so placed, a worm and gear completely housed and working in oil prevents its being moved by striking a stone, hillock or other obstruction. The steering mechanism is also geared to a sprocket on the crank shaft, so that it can be operated by power. The crank shaft of the engine carries on its ends heavy fifty-inch fly wheels which are keyed securely to it. Engaging each is a friction carrying a sprocket which drives the main wheel, which is on that side. If a friction is "thrown in," that is, made to engage and turn with its fly wheel, the main wheel on that side turns when the fly wheel does. If a friction is "thrown out," that is, released from its fly wheel, the main wheel on that side is free to move or stand still, no matter what the engine does. When both frictions are "in," the main wheels move with equal velocity. One does not stand idle while the other spins at double speed on the slippery place it may chance to strike. These frictions are independent of each other, each having its own lever by which it is thrown in and out.

No engine can develop its full power until the piston has attained its proper speed. An engine of the ordinary type has to start its load as soon as the piston begins to move. Desiring to start one of these traction engines out of a soft place, the engineer throws out both frictions and partly opens the throttle. The frictions remain stationary while the crank shaft and fly wheels revolve. When they have attained considerable velocity, he opens the throttle wide and at the same time throws in the frictions. Thus the momentum of the swiftly revolving fly wheels is added to the fully developed power of the engine. The two combined make a force that will start one of these engines out of places where tight geared engines stick fast.

The chain drive on this tractor is unique, the links being of malleable iron and fastened with case hardened steel pins arranged so that the steel plate inserted in the pin hole of the link takes all the friction off the iron, and hence they show no wear. The small driving chains are fastened with three-quarter inch pins, which have a strength of 26,000 pounds, while the large drive chains have one and one-eighth inch pins and a strength of 52,000 pounds. The advantages of such a drive are self-evident. If a link breaks, which seldom happens, it is the work of but a few minutes to insert a new one.

An engine driven with gears is often laid up a whole day to replace a broken tooth with a new one, and even longer when an entirely new gear must be received from the factory. Those who have had experience with gears under heavy pressure know that they will not work properly unless in perfect alinement. While a traction engine driven with gears should be perfectly rigid, this is not so with the chain drive. Sprockets some distance apart will run with perfect success with several degrees out of line. This makes it practical to use springs on these road engines. These relieve the machinery of much heavy jolting and allow the wheels to rest flat on the surface of the road, whether it be level or not.

The tires of the main wheels on this tractor are of seven-sixteenths inch steel and are made in widths varying from two to six feet, according to the kind of soil they must travel over. The tires carry sufficient grousers to give them a good "bite" on the ground. There are three rows of spokes of the tension type on each wheel and two rows cross and thus brace the wheel rigidly. These are one-inch a round. Those of the third row are one and three-eighths inches round and are placed straight. They carry the main drive sprocket, which is also braced diagonally from the tire so that all the pull comes on the tire and causes no undue strain on the rest of the wheel. This sprocket is made in four segments, so that a worn or broken one can be replaced without removing the wheel from the frame. For each row of spokes there is a separate cast hub, and each wheel has a heavy steel axle, to which the hubs are keyed, that turns in large oil reservoir boxes of the locomotive type. It is said that the 60-horsepower engine will do the work of sixty horses, and it is claimed that the 70-horsepower engine is the most powerful traction engine anywhere in the world, and will haul more than seventy horses.

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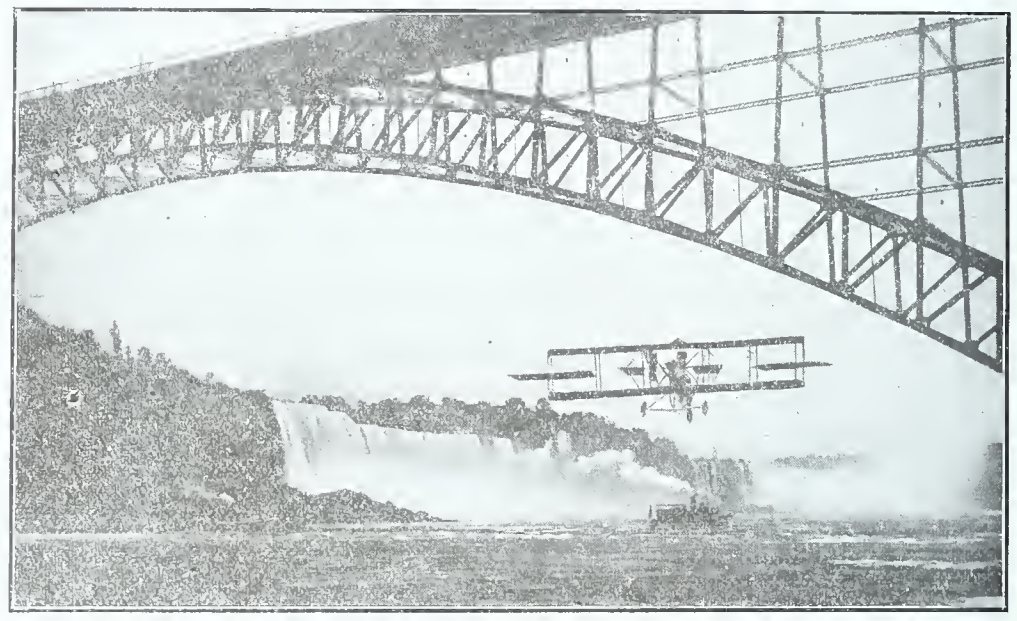
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OVER NIAGARA FALLS IN A BIPLANE.

The wonderful flight of Lincoln Beachey over the Niagara Falls and through the gorge above the rapids, under the steel arch viaduct joining the American and Canadian shores, is shown in the accompanying illustration.

In the cut is seen the aeroplane's sensational dip beneath the steel arch bridge spanning the Niagara gorge, some 2,000 feet below the mighty cataract. Twenty thousand people lined both sides of the river and saw Beachey make the dangerous dive beneath the bridge and rise gracefully into the upper air again.

When Beachey was ready for his flight, his machine was trundled from its place of exhibition in the park to the open common at Niagara and Ninth Streets. With but a very few preliminaries he was soon 2 000 feet in the air. The wind at that altitude was very strong and the aviator seemed to make slow progress toward the Falls.



The word had been passed that he intended to make the dip beneath the bridge on the occasion of his first flight, and every point of vantage on either side of the river was lined with humanity. Beachey went up another 1,000 feet over Niagara Falls and made a wide circle. He then pointed downward, gradually drawing over to the Canadian side of the river. A second circle brought him nearer the ground and a third placed him in the position for which he had been carefully maneuvering.

Tilting the guiding planes on his machine he shot downward like a huge bird darting after its prey, and a second later his engine was heard chugging under the bridge. As Beachey emerged on the downside it was realized that he had successfully accomplished the feat. When within 1,000 feet of the cantilever structure he gradually rose and passed over it, circling to the left and effecting a landing near the driving park at Niagara Falls, Ontario.

The aviator narrowly missed serious accident on the Canadian side, the wheels and lower plane of his machine barely clearing the high power cables of the Ontario Power Company as he dropped into a field near the driving park. It is stated that the upper planes of the flying machine cleared the arch about 50 feet, and the aviator maintains that he could have dropped still further had it been necessary.

This spectacular feat is another illustration of the command that man is acquiring over the air. The flying machine is beginning to come down to earth. It is now being regarded as what it really is—the subject of a rapidly developing department of engineering, founded on formulated laws, and having for its object the providing of a new vehicle to the practical world. The aeroplane alone offers the proper basis for any present speculation, the fallacy of the dirigible as a means of aerial navigation having been proved in many instances. Thanks to the agency of the automobile, in placing ready to hand the necessary high-grade materials and light-weight motors, the practical aeroplane is coming faster than any mechanical movement in the history of engineering. It required fifteen years to improve the automobile from the first machines that really ran to the present degree of motor car perfection. For a corresponding measure of aeroplane improvement it will hardly require five years, of which three have already passed. It is unlikely that the sizes of the airships of the future will differ very widely from those now being experimented with. Recent discoveries in the proper design of wing surfaces practically eliminate head reistance, and with this improvement in efficiency will probably come a great increase in speed. With motors and materials now available, it is to be expected that the aeroplane of the next few years will develop capacities in this direction far in excess of the fastest going now obtained by any other type of vehicle. Moreover, the average speeds of aeroplanes will be the same as their maximum speeds, because, as in the case of water vehicles but unlike land vehicles, the course is always uniform. It may be expected that the aeroplane will soon be used for the carrying of mail and express matter. Then, in conjunction with considerable utilization for military purposes, passengers will commence to be carried with safety and reliability.

BRITISH INVENTORS' INSTITUTE.

THE INVENTIVE AGE has received, from a London correspondent, an account of the establishment in that city of a permanent home for inventors. Efforts bave from time to time been made in this country to establish something of the sort, but as they were mainly the work of patent attorneys or of those who wished in some way to exploit inventors or to promote a private interest, they have never met with success. The London institute seems to be of a different character. Our correspondent says:

"British inventors are benceforward to have a permanent home in London. On January 15, at the Inns Court Hotel, at a meeting of inventors, patent agents, and manufacturers. it was decided to found "The Inventors' Institute." The Earl of Minto has consented to become its first president. Among the proposed vice-presidents are Lord Halsbury, Lord Justice Fletcher Moulton, the Chevalier Marconi, Sir Hiram Maxim, and Colonel T. E. Vickers; and tbe council is to include Kenric Murray, late secretary of the London Chamber of Commerce, Sir Valentine Grace, H. F. Watts, and Major W. A. Denny.

The objects of this institute are:—

The protection of the rights and liberties of inventors and patentees; the furtherance of their interests by procuring the passing of suitable Acts of Parliament removing existing bardships and anomalies; the provision of lectures and discussions on matters or controversies of interest; the assistance of members who are in difficulties; the provision of funds for prosecuting or defending actions by or against members; the granting of legal aid or advice and such otber objects as small benefit the work of its members.

Present at the meeting were Anglo-Indians, Canadians, and German residents in the country, as well as upwards of 150 otbers. Mr. Nicholas, a well-known barrister and authority on patent law, briefly put the hard case of the unbefriended and much swindled inventor without means. Every class of brain-worker except the inventor has some "home" or haven of advice and help in London, he said. The new institute is to meet this long-felt want, and to bring inventors more closely in touch with the Patent Office, the Board of Trade, and the Government. Fifty inventors and business men have already agreed to join the new institute.

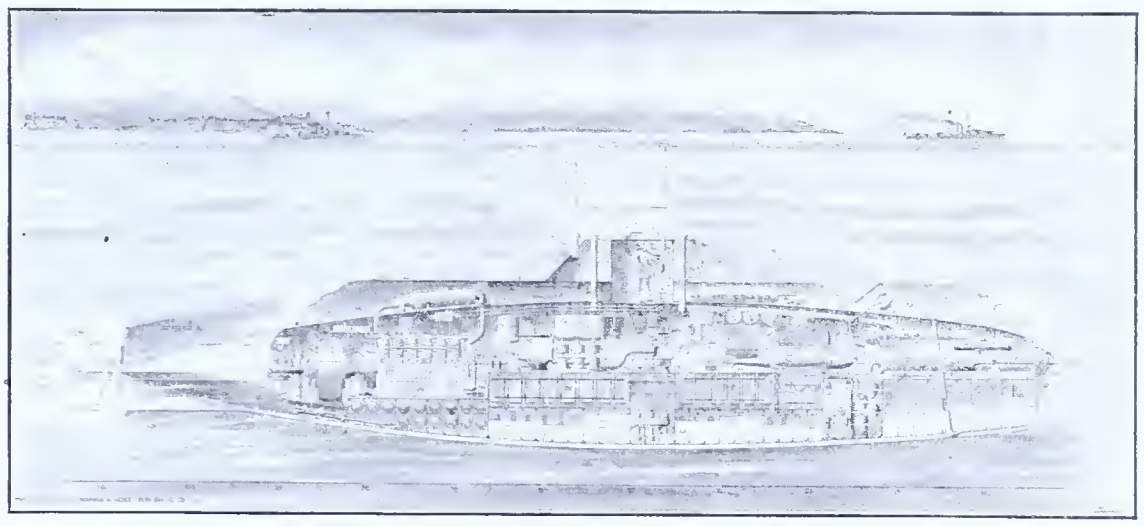
Questions being asked, it was elicited that not only inventors but patent agents and manufacturers are to be brought closer together, just as is the case in a similar institute founded some six years ago at Sydney, (N. S. W.) The institute will consist of fellows, wbo will be allowed to put F. I. I. after their names, and associates who may use the letters A. I. I.

A furtber meeting is to be held a month bence when progress will be reported, and in due course it is proposed to petition the Crown for the granting of a royal charter."

If the institute is managed along the lines described, it will be a useful enterprise, and we would like to see something of the kind established in Washington. Inventors would find it of benefit to be able to apply to such an institute for information, and it might prevent swindles and promote the business of those interested in patents, in an entirely legitimate way.

A SUBMARINE BOAT.

NEXT to the sky men, those that brave the unknown perils of the ocean depths are perhaps the class most deserving of the world's admiration. The picture of an art exhibit that holds the largest crowd of visitors, is often the lifeboat crew pushing their craft through the breakers to the rescue of the men clinging to the wreck. An illustration of heroism gives the artist a chance to play upon one's sympathy. But bow about the man whose work is below the waves; who, day after day, sometimes night after night, is as much out of tbe world as if dead: who sleeps—if he can sleep—huddled upon perhaps a blanket, perhaps the bare floor; who must breathe artificial air instead of the ozone of the sea breeze: and whose only light is that of the electric lamps? Such is the sailor that the submarine craft bas created. In every modern navy in the world does this under-water mariner serve, for the boat that plies beneath the sea is considered as necessary to the war fleet as the battlesbip itself. The steel tube the submarine can throw from its



hull is filled with such power that the percussion cap or the electric spark makes it an engine of destruction that may be more menacing, that may be more death-dealing, than the entire armament of the cruiser. Macbinery does much to move and guide the submarine and to discharge its weapons; but behind the wheels and levers and push-buttons must be men who know what to do when the time comes, and how to do it.

The accompanying chart of a modern submarine, just issued by the Norman W. Henley Publishing Co., New York, shows interesting details of the interior construction of these vessels. It is given in cross section, and has 200 parts numbered and named. The bow-torpedo launching tube and all its operating and controlling mechanism; the automatic devices used for the prevention of accidents; the propelling and steering machinery; the air pumps and storage flasks for under-water breathing; all the delicate mechanical means for making observations above tbe water when the boat is submerged and for determining the exact depth under the water; the storage battery outfit; the ballast and adjusting tanks—in fact, all tbe machinery and devices fitted in a modern submarine, are shown in detail. To make the engraving more readily understood, all the features are shown in operative form witb officers and men in the act of performing the duties assigned to them in service conditions.

Along the coast of the Atlantic, one may sometimes see what looks like a pole moving through the water. From it flutters a tiny flag, but that is all that is visible. Presently the pole rises higher and higher, and one sees what would look like tbe back of a huge black turtle, were it not for a little, round cylinder with dead-light windows in it. Now tbe craft is afloat, but so little of it is to be seen, even at close range, that a mile away the cylinder might be taken for a buoy or a bit of driftwood. On board a warship, the crew have plenty of room to exercise. Their duties compel them to be much of the time in the open air. Into the cabins the sun throws its morning rays, and sea breezes blow through the vessel day and night. In the blackened steel tube that has just risen from the water are half a dozen or so men who may not have seen daylight for a week. Tbey have not had even a breath of fresh air. No hammocks, no bunks save possibly cots for tbe officers. No deck to stroll upon. Her space is precious. Machinery takes first place; humanity gets what is left.

And the under-water sailor has to know more things than his mate upon the deck. He is trained in the use of many curious devices. Before he is assigned to a vessel he becomes quite an electrician. He understands how to run the air compressors, how the water tanks may be filled to sink the craft, how to operate the electric pumps that suck the water from the tanks and cause it to rise. Then there are gauges he must read, so that when on watch at night, he can tell how much oxygen is pouring into tbe air-purifiers, and if enough electricity is being generated. Every man on board is responsible for the lives of all. If he is ignorant of the purpose of a tiny wire, or if he forgets to open or close a valve, every human being may be suffocated from poisonous gases, or the boat may sink to where the sea pressure will crush her hull like an egg shell, because her gravity is too much for her buoyancy. A tiny hand moving around a dial tells the depth of the draught in water. It is the duty of ooe of the crew to continually watch that h

are no stoves or steam in the submarine—no room for such things. In summer heat is not greatly needed, but with winter tbe craft is an icebox. The men would rather work under the sea stripped to the skin, as in summer, than swaddled in woolens. as is necessary in winter. In the latter season, tbe sailors are subjected to a cold storage temperature. They get all the chills of a sleigh-ride party without any of the exhilaration.

Without cabin or even bunk, every bit of space available is utilized for operating the boat or the torpedo guns, and the crew takes what room is left. Such is the shape of tbe submarine, moreover, that there is very little moving about when it is under way. When the conning tower is closed and the boat is submerged, every man in the crew keeps almost in one position. To counteract the cold in winter there is only the heat from the gasoline engine, and tben the air becomes foul and damp. Opening the little cylinder which constitutes the conning tower for a fresh supply means taking the chance of shipping a wave and the flooding of the whole inner compartment. Anything but this. So the crew do the best they can in the close quarters, chilled to the bone and cramped to a degree of numbness.

The very danger and hardship of the life seems to create an esprit de corps among the men, and a confidence in their officers that—in the British and American service at least—have given the men of the submarine fleet a high standard of efficiency and discipline.

Moving Pictures May Infringe Copyright.

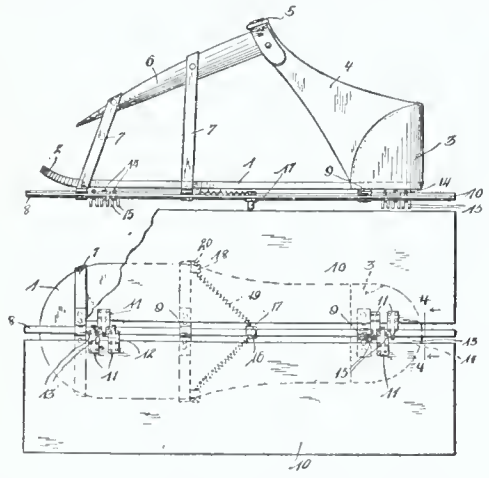
The Supreme Court has recently decided that tbe copyright of books applies with the same force to the dramatization of the same for moving pictures, as for the theater. The question was brought up in regard to the famous book "Ben Hur," which had been reproduced in film drama. Suit was brougbt against the moving picture company on the ground of infringement of copyright. The film people had not, it was declared, applied for permission to use tbe story. Testimony was produced to show tbat a theatrical firm had purchased the right to dramatize the book, and had produced the drama throughout the country. The case was decided against the moving picture company, and an appeal was taken to the U. S. Supreme Court, which upheld the decision of the lower tribunal. The court held that the infringement was not of the copyrighted book or the drama, but of the author's exclusive right to dramatize his own writings and to publicly perform that dramatization. In view of the mushroom like popularity of the film drama, tbe decision of id e importance.

CLEVER NEW PATENTS.

Swimming Shoes —Drinking-Cup Fountain. Non-Explosive Oil Container.—Lap Ring.

Swimming Shoes.

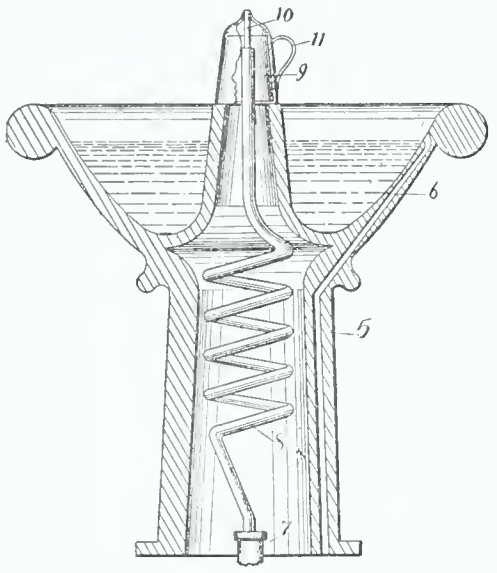
Water wings as an aid to swimming are well known, but now there comes along a device for the same purpose which is meant to be attached to the foot, and which is more in the nature of a true wing, since it is intended to open and close with the movement of the leg. It is the invention of Paul W. Klaphecke, of Catonsville, Md., and is illustrated in the accompanying cuts, which give a side elevation of the device, and an underside view of the shoe with the wings extended, one being partly broken away. It will be seen that the sole of the shoe (preferably of wood) is strapped to the foot and has a projecting rod 8. Coiled springs extend from the wings to the central collar 16 and hold the wings normally open. The wings have ears 11 on their edges which engage the rod 8 so that said wings may spread and fold, the former movement being limited by lugs 14 which extend in opposite directions, beneath the sole, so that as the wings are moved to an open position they engage the projections. Lugs 15 on the rod 8 limit the folding movement by engaging with the shoulders 13 on the ears



11. It is apparent that the relative displacement made and the resistance offered are advantageously increased to facilitate swimming. As the heavy parts of the shoe are buoyed up by the sole member, the tendency of the shoe to sink in the water is prevented and the weight diminished, thus offering no resistance in swimming. The means provided to limit the folding of the wings serves the additional function of providing for the attachment of springs to hold the wings open, thus increasing the resistance offered by returning the wings to an extended position independent of their action on the water.

Drinking-Cup Fountain.

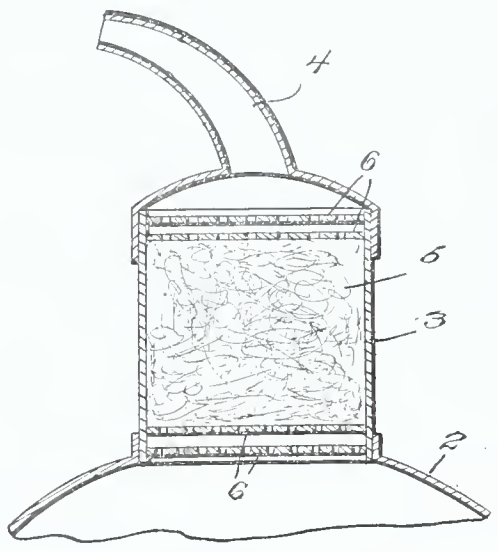
The fact that has been established within recent years, that diseases of various kinds have been transmitted by the use of public drinking cups, has led to the use of individual cups, for which one is usually required to pay, and also to the erection of bubbling fountains for drinking purposes. These fountains provide nozzles from which water continually flows, but as these nozzles are fixed in place and it is necessary for the user to bend and bring the lips to them, the position is inconvenient and the water usually flows over the chin in an unpleasant manner. To obviate these drawbacks a device has been patented by Frederick George Partington, of Coeur d'Alene, Idaho, which provides an everflowing nozzle with means for bringing it to the lips, and also with means for taking care of the overflow, the whole in a structure that is neat



and ornamental. As seen in the drawing, a flexible tube leads from the water pipe into a cup 9, and connects with the drinking nozzle 10 from which the water is discharged to the exterior of said cup, the waste water overflowing into the bowl 5, the overflow passing through the opening 6. The cup is provided with a handle to permit the user to lift it. As shown in the cut, the flexible tubing is coiled in the base of the stand or bowl in such a manner that it may be readily withdrawn to permit the user to lift the cup to the mouth.

Non-Explosive Oil Container.

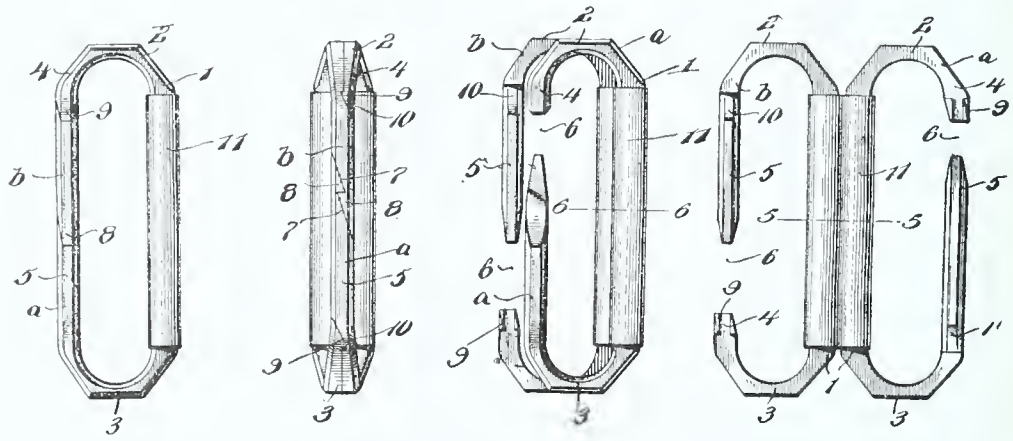
The increasing use of gasoline and similar explosive fluids in the industries, makes it of importance to provide safe vessels for holding them. One of the most original of such devices has been recently patented by a man from Austin, Texas, Robert L. Ziller. His invention consists in the interposition of a protective screen between the outer air and the contents of the can. In order to produce an effective



protector, it is necessary that the material should be refractory, as otherwise the filaments would burn out upon the application of heat. The material should be in the form of filaments, as this is the best to secure a rapid absorption of heat and a low emission of the same. The filaments must be resilient, as this characteristic, where the filaments are irregularly tangled in a mass, acts to hold them separated, thereby permitting the easy passage of fluid through the mass. The resilience also permits the mass to be compressed into a duct without being pressed so tightly against each other as to impede the passage of oil or other fluids within the container. The filaments are tangled so that they run in all directions through the mass, one thus engaging the other and holding it in place, so that the separate ones cannot drop out into the can. This tangling also makes the mass elastic. Metallic wool is used for these filaments, and when heat is applied the temperature is raised only locally, and the heat absorbing power being great, the heat is not transmitted to the other parts of the mass. The individual filaments are also permanently resilient. The cut shows a vessel for gasoline, having an outlet duct comprising a chamber and a nozzle, the chamber filled with a tangled mass of refractory, resilient filaments, held in place by perforated disks 6. The same construction can be applied to an inlet duct, thus allowing the entrance of air to the vessel, but preventing the entrance of flame.

Lap Ring.

An open ring, or lap ring, intended to couple chains together, is an indispensable adjunct to the equipment for many industries. A device of this nature which is unusually simple and efficient has just been patented by James Blalock, of Ben Hur, Ark. It has reversely arranged open link sections with arms of uneven length that overlap, the longer arms of both sections overlapping at the middle portion of the link, and the sections being connected together by a sleeve, so that by proper manipulation of the link the sections can be swung open to permit the parts to be coupled or uncoupled. The drawings show the device, giving a side view, an edge view, a view of the ring being opened, and finally a view of the ring open. It will be noted that each section of the ring consists of a bar with curved arms of unequal length, said arms failing to meet so that an opening is provided to permit the insertion of the links of a chain. The sections are arranged so that the long arms extend



toward each other from opposite ends of the coupling, and these ends normally overlap, recesses and shoulders preventing longitudinal movement when the link is closed. The short arms also interlock with the long arms by means of shoulders 9 and recesses 10. The straight portions are hinged together. In opening the device, the sections are moved apart by separating the arms 5, and the links moved relatively to each other in a direction parallel with the plane of the link so as to place one arm 5 above the other. In this position the links can swing outward in opposite directions to open position, for enabling the coupling to be attached to a chain, a cable, a clevis, or to anything else that it is desired to couple.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

DIXIE COTTON PICKER CO. v. BULLOCK et al.

(Circuit Court, N. D. Illinois, E. D. Aug. 4, 1911. 188 F. R. p. 921.)

1. CANCELLATION OF INSTRUMENTS—EQUITY—IRREPARABLE INJURY.

Where the injury caused by a breach of contract is irreparable, and damages are wholly inadequate, equity has power to decree a reeissiou.

2. PATENTS — MANUFACTURE AND SALE—BREACH OF CONTRACT.

Where the contract for the manufacture and sale of certain patented machinery provided that defendant's were granted the privilege of manufacturing, but the contract eontained no covenant obligating them to do so, or to attempt to sell, eomplainant relying on the chance that defendants would take advantage of their privilege to manufacture, rather than on their covenaut to do so, the contract was not subject to cancellation for defendants' refusal to manufacture, or to attempt to sell machines properly eonstructed under the patents.

3. PATENTS—CONTRACTS—CONSTRUCTION—PATENTED MACHINERY—MANUFACTURE.

Where the contract for the manufacture and sale of eertaiu patented machinery provided that defeudant agreed to be diligent in supplying the marke1 with suffieient machines to supply the demand of the market therefor, defendant was not bound by such agreement to create a market or to try to sell the machines.

4. PATENTS—CONTRACTS-BREACH-REMEDY.

Where a contract for the manufacture and sale of patented maehinery provided that if complainants were dissatisfied with the diligeuee used by defendant, its remedy should be as follows, and then coutained a provision that complaiuant should send to defendant bona fide orders for machines by solvent responsible parties to be paid in cash, there being no allegation that orders had been so seut, and that defendauts had refused to fill them, defendants were not subject to a suit for caneellation of the contraet on the ground that they had failed to diligently manufaeture and sell the machines.

5. PATENTS — CONTRACTS — MANUFACTURE AND SALE.

Where there was nothing in a contract for the manufacture and sale of eertain machinery obligating defendants to comply with the suggestions of complainant's meehanical expert, nor to refrain from spying on the work of sueh expert, nor to refrain from taking out patents on devices embodying the ideas of the expert, nor to refrain from trying to purehase the stock of complainant company, nor to terminate the contract, the fact that defendants had committed all such aets was not ground for eancellation of the contract in equity.

6. PATENTS—CONTRACTS—BREACH.

Where a contraet for the manufacture and sale of certain patented maehinery coutained a covenant obligating defendants not to manufacture other similar maehinery, but the contraet did not provide that a breaeh of sueh covenant should give eomplainaut a right to rescind, a breach thereof was not ground for eancellation in equity, in the absence of a showing that complainaut would be irreparably injured if such a relief was denied.

THOMAS A. EDISON, Inc., v. IRA M. SMITH MERCANTILE CO.

(Circuit Court, W. D. Michigan, S. D. July 25, 1911. 188 F. R. p. 925.)

1. PATENTS—RIGHTS OF PATENTEE—PRICE OF SALE.

A patentee may, by appropriate contract, reserve to himself eontrol over the priee or other conditions attending the public enjoyment of the patented article.

2. PATENTS—PATENTED ARTICLE — SALE—RESTRICTIONS.

Where priee restrictions and other conditions are imposed by contraet ou the sale of a patented article, such restrictions will or will not be considered as running with the article, depending in each ease on the transaction by which the patentee offered the article to the public for use; the right of use and resale being such only as might be normally appropriate to the artiele and implied from the circumstances of the original sale.

3. PATENTS—SALE OF PATENTED ARTICLE—PRICE RESTRICTIONS—INJUNCTION.

Patented phonograph records were manufactured and sold under eontracts authorizing jobbers and dealers to resell the same, provided that such resale should not be made except for a speeified price, and that ou any breaeh of the condition the license to use and vend the reeord implied from the purchase for sale immediately terminated. The stoek of an authorized dealer in such records having been damaged by fire, it was abandoned to an insurance eompany which sold the stock to a salvage company by whieh it was sold to defendant; some of the records being in the original eartons and others having been replaeed in blank cartons. Held, that defendant having offered such records for sale at eut prices with knowledge of the restrietions under which they were originally sold was subject to an injunction restraining a resale at less than the contract priees.

4. PATENTS—SALE OF PATENTED ARTICLE—PRICE RESTRICTIONS.

The right of a patentee to impose a price restriction on sale of a patented artiele extends to a lieensee to whom has been granted the exclusive right to make, use, and sell the patented invention throughout the United States.

5. PATENTS — SALE IN VIOLATION OF RESTRICTIONS — INJUNCTION — ADJUDICATION OF PATENT.

Where there was nothing to rebut the presumption of validity of a patent, and there was a certain public acquiescence, it was no objection to the issuanee of a temporary injunetion to restrain defendant's sale of the patented artiele in violation of price restrietions that the patent had never been adjudicated.

RATHBONE SARD & CO. v. CHAMPION STEEL RANGE CO.

(Circuit Court of Appeals, Sixth Circuit. July 11, 1911. 189 F. R. p. 26.)

1. TRADE-MARKS AND TRADE-NAMES—"UNFAIR COMPETITION"-WHAT CONSTITUTES.

The essenee of the wrong in unfair competition consists in the sale of the goods of one manufacturer or vendor for those of another, and the eopying by one manufacturer of stoves of an unpatented design of a stove made by another, only a few of which had been sold so that it was not made known to the buying publie, and no purchaser was deceived, the characteristie marks of the original designer being removed and those of the maker substituted, did not constitute unfair competition whieh would sustain a suit for injnnetiou.

2. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION-WHAT CONSTITUTES.

The faet that an article of defendant's manufaeture is represented by unprineipled retailers as that of complainant does not render defendant liable for unfair competiou, providing it did its legal duty in distinguishing its product from that of complainant.

3. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION-WHAT CONSTITUTES.

Where the deeeption of purchasers is not the natural result of the imitation by defendant of goods made by eomplainant, and there is no intention to so deceive purehasers, a case of unfair competition is not made out.

W. W. SLY MFG. CO. v. RUSSELL & CO.

(Circuit Court of Appeals, Sixth Circuit July 12, 1911. 189 F. R. p. 61.)

PATENTS —CONSTRUCTION—LIMITATION BY PROCEEDINGS IN PATENT OFFICE.

Where an applieant for a patent acquiesees in the rejeetion of the claims presented, and amends the same or substitutes others to meet the objeetions of the Patent Office, he must be deemed to have surrendered and diselaimed what he has thus coneeded, aud is bound by the limitation so imposed: and iu such case it is immaterial whether the Patent Office was right or wrong in rejecting the original elaims.

SIMPLEX RAILWAY APPLIANCE CO. v. PRESSED STEEL CAR CO.

(Circuit Court of Appeals, Second Circuit. May 8, 1911. 189 F. R. p. 70.)

1. PATENTS — DISCLAIMER — SUIT FOR INFRINGEMENT.

A disclaimer of an unnecessary and inadvertent statement iu the specifieation of a patent may be entered in a suit for its infringement, where its effect is not to broaden the claim in issue, but to limit it to the actual invention, strictly within the terms of the claim, and as described and shown, and to save the claim from possible ambiguity.

2. PATENTS — VALIDITY AND INVENTION — CAR TRUCK BOLSTER.

The Bauer patent, No. 593,410, for a car truck bolster, elaim 6, was not antieipated and diseloses iuvention; also held infringed.

MALLEABLE IRON RANGE CO. v. BECKWITH.

(Circuit Court of Appeals, Seventh Circuit. April 18, 1911. 189 F. R. p. 74.)

1. PATENTS — CONSTRUCTION OF TERMS—"CONVEX" SURFACE.

The word "convex," used in a claim of a patent as applied to a surface, is to be given its generally aeeepted meaning, as indieating a surface of a more or less spherical form, rather than cylindrieal.

2. PATENTS — VALIDITY — INFRINGEMENT—RESERVOIR FOR STOVES.

The Beekwith patent, No. 787,425, for a reservoir for stoves and ranges, claim 11, is not void for indefiniteness, nor for antieipation, but discloses patentable invention, the combination shown being one of great utility and success; also held infringed.

GILBERT MFG. CO. v. POST & LESTER COMPANY.

(Circuit Court, D. Conneeticut. March 13, 1911. 189 F. R. p. 81.)

1. PATENTS — SUIT FOR INFRINGEMENT—DEMURRER TO BILL.

A demurrer to a bill for infringement on the ground that the patent is invalid on its face is proper in eases of manifest invalidity, as saving labor, time, and expense, but should not be urged unless eompetent counsel representing defendant are absolutely sure of their ground.

2. PATENTS — INVENTION — SPARE TIRE HOLDER.

The Bowers patent, No. 872,892, for a spare tire holder for automobiles, is not so manifestly void on its face for lack of invention as to warraut its being so deelared on demurrer.

DA PRATO STATUARY CO. v. GIULIANI STATUARY CO.

(Circuit Court, D. Miunesota, Third Division. May 19, 1911. 189 F. R. p. 90.)

1. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION — TEMPORARY INJUNCTION.

A temporary injunction against the publieation by defendant in its eatalogue of pietures of statuary whieh it produces and sells for the decoration of churehes and religious edifiees, which are exact eopies of pietures in the eatalogue of complainant, which is engaged in the same business, will not be granted on the ground of unfair eompetition.

2. COPYRIGHTS — INFRINGEMENT — INJUNCTION—EVIDENCE.

In a suit to enjoin the publication by defendant in its eatalogue of copies of euts eopyrighted by eomplainant, evidenee held to show that the cuts in defendant's eatalogue were copied from those eopyrighted by complainant.

3. COPYRIGHTS — INFRINGEMENT — INJUNCTION—EVIDENCE.

In a suit to enjoin the publication by defendant of cuts copyrighted by eomplainant, where it is proven that defendant has eopied one or more of the copyrighted euts, a finding that the others as to whieh no explanation is made were also eopied is supported by the evidence.

4. COPYRIGHTS—SUBJECT OF COPYRIGHTS—CUTS.

Cuts of statuary and other artic es for the decoration of churches and other religious edifiees in the catalogue of a firm engaged in producing and selling such articles are proper subjects of eopyright.

5. COPYRIGHTS-SUBJECTS OF COPYRIGHTS—TRADE CATALOGUE.

A trade catalogue may be the subject of a eopyright.

6. COPYRIGHTS — EXTENT OF RIGHTS ACQUIRED.

Under Copyright Act March 4, 1909, c. 320, § 3, 35 Stat. 1076 (U. S. Comp. St. Supp. 1909, p. 1290), providing that the copyright shall protect all the copyrightable component parts of the work "copyrighted," where complainant copyrighted its catalogue of statuary and other articles for the decoration of churches and other religious edifices, it was entitled to the protection of the copyright law as to each cut eontained therein.

7. COPYRIGHTS — INJUNCTION — EXTENT OF INFRINGEMENT.

Where complainant eatalogue eontained 2,813 cuts and of these 18 which were legally copyrighted were reproduced in defendant's eatalogue whieh contained 393 euts, this is sufficient to justify the granting af an injunetion, but the injunetion should be limited to the euts that have been copied.

PARKE-DAVIS & CO. v. H. K. MULFORD CO. (two eases).

(Circuit Court, S. D. New York. April 28, 1911. 189 F. R. p. 95.)

1. PATENTS—VALIDITY AND INFRINGEMENT ADRENALIN.

The Takamine patent, No. 730,176, for a substanee called "Adrenalin," extraeted from the suprarenal glauds of living animals, and containing the active prineiple of sueh glands praetieally free from inert eonstituents, and crystalline in its dry form, is valid, and, exeepting elaim 1 and 2, eovers not only the dry powder but also its solution, but not its salts. Claims 1, 2, 6, 9, 11, 12, 13, 14, and 15 held infringed by the dry product of defendant, known as "Adrin," but not by defendant's solution, which is of a salt of Adrin.

2. PATENTS—VALIDITY — MULTIPLICATION OF CLAIMS.

It is not objectionable for a pateutee to first make as broad a claim as he can in good faith and follow it with narrower claims differentiated from each other to proteet himself against possible anticipations of which he may not be aware.

3. PATENTS — VALIDITY — UTILITY OF PRODUCT.

A substance extracted from animal tissue for medicinal use, which is new, practically and therapeutically may be patentable, although it differs from previous preparations only in its degree of purity from other portions of the tissue.

4. PATENTS—VALIDITY AND INFRINGEMENT—SOLUTION ADRENALIN.

The Takamine patent, No. 753,177, claims 1, 2, 5, aud 6,, for a substanee eonsisting of the blood pressure raising principle of the suprarenal glands, or a salt of such product, in solution with a nonsuprarenal substance whieh renders the solution eommercially stable, held not anticipated or void for prior use, and also infringed. Claims 3 aud 4 held void for anticipation.

ASHLEY v. SAMUEL C. TATUM CO.

(Circuit Court of Appeals, Second Circuit. June 6, 1911. 189 F. R. p. 357.)

PATENTS — INVENTION — INKSTAND.

The Ashley patent, No. 829,752, for an inkstand whieh is made of glass, having a square or angular base and a substantially flat top with a eireular reservoir therein, the glass being turned in to form a dome-shaped eover to the reservoir leaving au opening in the center, is void for lack of invention in view of the prior art.

LYON METALLIC MFG. CO. v. COLUMBIA MACH. WORKS et al.

(Circuit Court E. D. New York. Mareh 1, 1911. 189 F. R. p. 386.)

PATENTS—VALIDITY AND INFRINGEMENT — GEAR CASE.

The Waters patent, No. 789,306, for a gear ease, adapted to cover the reduetion gear of eleetric motors of trolley ears, was not anticipated, and discloses iuvention; also held infringed by eertaiu styles of gear cases which were made by defendant when the suit was eommenced, but not by the style afterward adopted, aud whieh was the only one made at the time of trial.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Carl A. Anderson, Joliet, Illinois. Apparatus for Boiler Flue Work.—It is the aim of the present invention to provide an apparatus with hanging means adapted to suspend an air or other motor in front of the flue sheet of a boiler, and capable of ready adjustment to enable a flue roller tool, cutter or other tool to operate on any portion of the flue sheet without adjusting the hanger, which supports the motor, or changing the position of the latter with respect to the flue sheet. The apparatus comprises in its construction a motor pivotally mounted in the hanger, extensible shaft members slidably connected with each other and driven by the motor, and a tool-holding shaft flexibly connected with one of the shaft members.

Benjamin F. Fowler, Minneapolis, Minn., inventor. Two patents. Egg Beater and Door Check. J. J. MacKay and Edward W. Bingenheimer, of the same place, assignees of the first patent.—The invention of the first patent relates to a hand-operated device for beating eggs and whipping cream, the handle of which is equipped with an air valve adapted to close on the down-stroke and open on the up-stroke, whereby air will be forced through the material operated on to facilitate the beating of eggs and the whipping of cream and similar operations.

The second patent covers a door check, designed for holding a door in an open position, and comprises a knob having an axial opening extending longitudinally thereof and flaring from an intermediate point towards the outer end, a headed shank adapted to enter and fit snugly the contracted portion of the said opening and retain the said knob in position, and a cushion fitted on the shank in rear of the head and closing the flared end of the opening of the knob.

Jochim Ploen, Manning, Ia. Harrow Attachment for Planters.—The present invention is designed for harrowing the soil in rear of the planter simultaneously with the operation thereof to obviate the necessity of going over the ground with a harrow after the planter. The attachment comprises a transversely disposed harrow bar provided at its end portions with teeth, and spaced connecting bars receiving at their rear ends the intermediate portion of the harrow bar and provided at their front ends with means for connecting the harrow bar with a planter. The end portions of the harrow bar are arranged at an angle to the central portion, which is mounted for rotary adjustment to set the harrow teeth at different angles.

William B. Simpson, Shreveport, La. Two patents. Sad Iron and Gate.—The first patent covers a sad iron provided with a detachable handle equipped with means, adapted to permit the handle to be quickly applied to and removed from the body of the sad iron. It consists of front and rear headed studs projecting upwardly from the body, a U-shaped frame supporting the handle and provided at the bottom with slots to engage with the headed studs of the body, and a catch pivotally mounted on the U-shaped frame and arranged to swing into and out of engagement with one of the studs to retain the frame and the studs in interlocked relation.

The object of the invention of the second patent is to provide a device adapted to enable an ordinary farm gate to be converted into a tilting gate, and capable of easy operation to permit a gate to be opened and closed at a distance without dismounting from a horse or leaving a vehicle. The device consists of a rock shaft mounted between a pair of posts, lever arms extending from the rock shaft, operating cables connected to the lever arms, and holding arms extending from the rock shaft between the lever arms and adapted to receive a gate.

Adam Wackman, St. Louis, Mo. Draft Rigging for Railway Cars.—The present invention has for its object to provide a draft rigging adapted to absorb the shocks and minimize their effect on railway cars and thereby reduce the cost of repairs to a minimum. It is equipped with frictional devices, adapted to first retard and finally check the inward or rearward movement of the draw bar to prevent the buffing spring or springs from being entirely compressed and deadened, thereby increasing the life and efficiency of the same. The draft rigging is also provided with means for checking and limiting the outward or forward movement of the draw bar to prevent the rear pulling spring or springs from entirely collapsing and becoming deadened and liable to fracture. The draft rigging is materially increased in strength, by constructing the parts so as to admit of the employment of a bolster having a solid center.

William D. Baker. Rogers, Ark. Two patents. Clothes Cabinet and Fly Trap.—The object of the invention of the first patent is to provide means, whereby a suit of clothes or other garment may be stored, so as to be protected against dust while at the same time they may be readily inspected or withdrawn when desired. This object is attained by means of a plurality of brackets, pivotally mounted on one of the walls of a cabinet, and connections between the brackets and the door of the cabinet, whereby the opening and closing movements of the door will cause like movements of the brackets.

It is the aim of the invention of the second patent to provide an efficient fly trap, designed to be mounted on a screen door for catching the flies which accumulate on the latter, and it is capable of being readily removed for destroying the captured insects and of being quickly replaced when the same have been emptied from it. The trap is adapted to hold a bait in position for attracting the flies to the entrance of the trap, and of retaining the bait in place to prevent the same from being dislodged by the opening and closing of the screen door.

Louis Hanson, Cottonwood, Idaho. Bag Holder.—It is the purpose of the present invention to provide a bag holder, adapted to enable one person to fill a sack without having another person to hold it open for such operation, and capable of adjustment to accommodate bags of different sizes and adapted also when not in use to be compactly arranged so as to be easily carried or stored. It comprises in its construction a back composed of a hollow lower section, connected at the bottom with a base, and an extensible upper section telescoping into the hollow lower section and carrying means for supporting a sack or bag. The particular means employed is an extensible band which is placed within a ring carried by the stand; said band being removable from the ring so as to permit the band to be placed within a bag.

Daniel H. Buell, Marietta, Ohio. Label Holder.—The inventor having in mind that in many orchards the identity of the trees becomes lost, owing to the fact that the names on the labels originally employed are obliterated through the action of the elements, he has provided a labeling device in which the label holder is retained within a casing, the holder and casing coacting to retain the holder within the casing. The device is made of aluminum or other suitable material, is simple in construction and cheap to manufacture. It is composed of an oblong casing having opposed side members with one end open and the other end closed, one of the members having an integral spring lip at the open end thereof, and a label holder slidably mounted within the casing and adapted to receive a label, one end of the holder being bent to form a transverse groove to be engaged by the lip of the casing for retaining the holder within the latter, the holder terminating beyond the groove in a thumb piece to facilitate removal of the holder.

John R. Patterson, Newport, Wash. Perch for Poultry.—This invention relates to a perch which may be used for birds, but is particularly adapted for fowls. As is well known, mites prey upon the fowls during the night, invariably leaving them in the morning and finding refuge on the perches. Through a natural instinct of self preservation, they usually secrete themselves on the underside of the perch where they lay their eggs and propagate their young. In this invention the inventor provides a perch which is constructed to receive and hold coal-oil for a long time. The perch is made up of spaced longitudinal bars having upwardly converging inclined bottom edges which extend the whole length of each bar. Between the bars a strip of absorbent material is secured, and extends the whole length of the bar and is exposed at the underside of the perch at the converging edges of the bars. In order to maintain the bars spaced apart, blocks are interposed between the bars above the absorbent material. As a result, the absorbent material, which is in the form of felt or wicking, is clamped between the bars and will always remain in position at the underside of the perch. The blocks keep the bars spaced apart sufficiently for the introduction of coal-oil at the top of the perch.

Milton T. J. Ochs, Allentown, Pa. Automobile Tire.—The invention relates to that class of pneumatic tires which are made up of a plurality of inflatable sections, said sections being clamped to a hollow rim or air tube, which in turn is held to the rim of any ordinary wheel. The hollow rim contains a valve through which air may be forced, and a plurality of ports that register with corresponding ports in the inflatable sections, whereby the inflating of all the sections may be simultaneously accomplished. Each section is secured between flanges extending from the rim, and a perforated plate is fitted within each section for the purpose of holding the same to the rim between the flanges thereof, the plate being drawn up tight by bolts so as to form an air tight joint between the rim and sections. In this way a simple and effective means for attaching the sections to the rim is provided, so as to permit of ready repair in case of puncture. The demand for an improvement on the present construction of pneumatic tires is increasing, and this invention would seem to answer the desired purpose in every respect.

Charles F. Greiner, Biloxi, Miss. Apparatus for Picking Crabs.—The object of this invention is to provide an apparatus whereby the meat of crabs may be separated from the fragile shells thereof without crushing or breaking the shells, or permitting the same to be included with the meat, and without damaging the meat to any extent. To accomplish this purpose an apparatus is provided with means for directing one or more jets of compressed air, steam or other fluid against the shell of a crab, lobster, or the like for blowing away and disengaging the meat from the shell or bones. The apparatus is also provided with nozzles arranged to hold the crab or lobster while the meat is being picked therefrom, and capable of being readily operated to clamp a crab and release the picked shell. The invention is a novel one, and the patent covers broadly any means for accomplishing the purpose stated. The invention has been tested commercially and has been found to accomplish the end sought.

Samuel J. Pearson, Bennettsville, S. C. Vehicle Reach Coupling.—The object of this invention is to provide a joint designed for use on the reaches of automobiles, agricultural and other machines and constructed so as to enable the wear of the parts to be readily taken up, so as to prevent looseness of the joints and consequent lost motion. To the rear axle of the vehicle a pair of cuffs are secured provided with integral forwardly converging diagonally arranged arms. To said arms are pivotally connected the rear ends of forwardly converging reach rods. The horizontal pivots connecting the reach rods to the cuffs permit only a vertical movement of the rear axle. Bearing blocks are interlocked with the reach rods and engage the arms of the cuffs, and wedges are employed to maintain the bearing blocks tightly in position. By means of the wedges lost motion may be taken up as desired.

Reuben Jones, inventor, Chamblee, Ga.; S. S. Gibbs, assignee, Atlanta, Ga. Plow Fender.—The object of this invention is to provide means for attaching a plow fender to the beam of a plow so as to allow adjustment of the fender longitudinally and laterally with relation to the plow beam, and also provide for the raising and lowering of the fender, whereby the latter may be arranged in the desired position to permit the proper amount of soil to pass beneath it to the plants under cultivation, and at the same time afford the necessary protection to the plants to prevent them from being covered or injured. The novelty of the invention consists in the means for attaching the fender to the beam, and broadly stated this comprises a fender having an arm at its front end with a curved terminal portion arranged in substantially a horizontal position, an attaching member provided with a curved bearing portion receiving the curved portion of the arm and also arranged horizontally, a bolt securing the arm to the attachment member, and a U-shaped clamp for securing the attaching member to the beam of the plow. In this way an arcuate adjustment of the arm provided at the front end of the fender on the attaching member is permitted, so as to cause the raising and lowering of the fender when desired.

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FOR SALE—Patent No. 1,004,475. Car Step. An extensible step for railroad cars. Fills a long felt want. Address, Mrs. Anna A. Schrader, Mt. Olive, Illinois. mar

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FOR SALE—U. S. Patent No. 1,002,155, dated Aug. 29, 1911. Up-to-date automatic wagon brake. Will sell reasonably. For further particulars and drawings, apply John P. Jensen, Foley Brook, New Brunswick, Canada. mar

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FOR SALE outright—U. S. Patent No. 1,004,655, dated October 3, 1911. Corn Planter Wheel. An open wheel with detachable concave tire. Two kinds of wheels in one. Address, S. P. Johnson, West Point, Nebr. mar

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FOR SALE—Patent No. 1,006,266. Railway Cross Tie, made of steel strips. Simple and inexpensive to manufacture. The best tie ever invented. Patents in the United States, Canada and Mexico. Address, V. L. Miller, Miller, Wyoming. mar

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WANTED—A company to manufacture my suspended tramway, patent No. 992,672, on royalty basis. Indispensable in mercantile establishments for conveying goods. Saves labor, reduces expense, increases speed, and prevents breakage. Address, Patrick Killpatrick, Huron, S. D. my

WANTED—A company to manufacture my massage instrument on royalty. Body part which holds tonics, plated silver, with perforated lid, over which is a lid of studded rubber, also perforated. Handle of wood. Only instrument that applies tonics and does the massaging. Patent No. 1,007,879, granted Nov. 7, 1911. Address, Daisy Lee, 1240 Emerald Ave., Chicago Heights, Ill. apr

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WASHINGTON, D. C., MARCH 1, 1912.

HOW ONE PATENT WAS LOST.—A TECHNICAL DECISION.

Under Section 4886 of the Revised Statutes it is provided.

"Any person who has invented or discovered a[n] new and useful art, machine, ma[nu]facture, or composition of matte[r] any new and useful improvemen[t] thereof, not known or used by others in this country, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, and not in public use, or on sale for more than two years prior to his application, unless the same is proved to have been abandoned, may upon payment of the fees required by law, and other due proceedings had, obtain a patent therefor."

It will be noted that the phrase of the statute is "on sale for more than two years prior to his application." This question has been before the courts many times and has been decided in various ways, much depending upon the particular circumstances of each case. The facts in this case which was decided by the Circuit Court for the District of Massachusetts were as follows:

On March 16, 1905, Taylor, the patentee, was engineer in charge of the manufacture and installation of a ventilating apparatus made by the complainant: that on or about Feb. 27, 1905, the complainant entered into a contract with the Second Church of Christ, Scientist, in Kansas City, Mo., to furnish it with a structure made in substantial accordance with Taylor's application, the invention being a ventilating apparatus, the contract providing for the completion of the work on February 27, 1906; that the work was not completed at that time, but later, or not until July 3, 1906. The application for the patent was filed in the Patent Office March 5, 1908. Two years from March 5, 1908, would carry the date back to March 5, 1906. The question therefore before the Court was, was the invention on sale before March 5, 1906? The Court held that it was, although the facts showed that the apparatus was not completed until July 3, 1906.

This is certainly an extraordinary case, as it carries the doctrine of "public use or on sale" to an extreme point. We do not think for a moment that the decision will be accepted, but that the case will be appealed to the Circuit Court of Appeals. It certainly should be, for we feel that the decision, if allowed to stand, would create an improper precedent. We have no idea that the Circuit Court of Appeals will sustain the decision of the lower court.

This decision, however, emphasizes the importance of patentees applying for patents as soon as possible. Many inventors make an invention and start to manufacture before they make their applications. If the applicant had in this case applied for the patent in 1906, there never would have been any objection raised. Apparently he had the money to apply for the patent, and why he should have delayed for such a long period is a mystery. This case ought to warn inventors and manufacturers of the necessity of making early applications for patents on their inventions, if they are going to apply for patents at all.

THE VALUE OF TRADEMARK RIGHTS.

In a recent bulletin of the United States Trade-mark Association, attention was called to a trade-mark case which is deserving of special mention. It is entitled Wolfe Brothers & Co. v. Hamilton Brown Shoe Company, and has been pending in the courts for several years. The complainant was a corporation located in the city of Cincinnati and engaged in the manufacture of shoes, to which it gave the name "The American Girl," and dated its rights back to 1896 through its predecessors. In addition to the title, Wolfe Brothers & Co. adopted the catch phrase "A shoe as good as its name," using at the same time the picture of the head of a lady.

The defendant was a corporation located in St. Louis, Mo., and a very large manufacturer of shoes. In August 1900 the defendant adopted as a trade-mark the words "The American Lady" with the picture of a lady. In October, 1903, it advertised with its American Lady shoes the catch phrase "The Shoe Deserves its Name." The defendant later altered the catch phrase to read "With the Character of the Woman."

Considerable testimony was taken, the complainant charging infringement and also claiming unfair competition. Upon the hearing the Circuit Court dismissed complainant's bill, and the complainant appealed to the Circuit Court of Appeals of the Eighth Circuit. That tribunal reversed the decision of the Circuit Court, and entered a decree enjoining the defendant from using the name "The American Lady" as applied to its shoes for women, when not accompanied with other matter clearly indicating that such shoes are its own manufacture, and, therefore, not of complainant's, and also from using, in connection with such name, as applied to its shoes for women, the catch phrase "With the Character of the Woman," or any phrase in simulation of the phrase "A Shoe as Good as its Name." It also allowed an accounting limited to the time since the commencement of the suit.

It appears from the testimony that the infringement was a wholly flagrant one. In January, 1901, Wolfe Brothers & Co., the complainant, on seeing one of defendant's advertisements of its shoes under the designation, "The American Lady," immediately wrote to defendant calling attention to the fact that complainant regarded it as an infringement upon its trade name, "The American Girl." To this letter the defendant answered in substance that it did not regard its use of the word, "The American Lady," with the picture of a lady as an infringement. To this Wolfe Brothers & Co. replied suggesting that if defendant would further consider the matter they thought it would come to the conclusion that it did constitute an infringement, and expressing the desire that the matter be adjusted between themselves without legal procedure. To this letter defendant made no reply. Defendant's treasurer upon cross examination, in answer to the inquiry as to whether the first of the above letters was answered merely as a matter of courtesy, or because there was merit in the contention set up by complainant in the letter, said:—

"My letter was prompted solely by a feeling of courtesy and politeness, as I never seriously regarded their claim. In fact, coming from a house relatively obscure, it seemed to me a matter more of a joke than a matter of any serious importance."

The Court of Appeals commenting on the action of the defendant said:—

"It may be that some parties regard a complaint coming from one relatively more obscure as a joke, not a matter to receive serious consideration, and not of sufficient importance to waste the time necessary to answer, but in the courts the most obscure and lowly person is entitled to be received upon the same level as his opponent, and the claim that his opponent has trampled upon his rights is entitled to such time of the court as may be necessary to give it full and careful consideration, however small to others his claim may appear to be."

After this action of the United States Circuit Court of Appeals had been certified to the Circuit Court with directions to enter a decree in accordance therewith, the matter was referred to a special master in accordance with the usual practice, to take testimony upon the accounting for the purpose of ascertaining the damages to which the complainant was entitled under the decree of the court. We are informed that the master has filed his report to the Circuit Court giving judgment for the complainant and against the defendant company for $445,311.55. The decision of the Court of Appeals limited the recovery of profits to the time which had elapsed since the beginning of the action. As the accounting covered only that time, a period of about four years, it will be seen that the valuation which these figures place upon the trade-mark in controversy is a very large one.

This judgment is undoubtedly the largest ever recovered in a suit for trade-mark infringement or unfair competition in any court. While the report is subject to the approval of the United States Circuit Court and to review by the Court of Appeals, still the fact that the accounting occupied some two years shows that it was very carefully attended to and is likely to be not far from right.

A trade-mark right is different from a patent right. A patent right expires within seventeen years, but a trade-mark right may continue indefinitely. There are some trade-marks used in commerce which have been employed by the owners for a hundred years, and their use will probably continue as long as the business lasts.

A trade-mark right becomes more valuable the longer it is used. Advertising increases its value, but good business management will accomplish much towards making the right of value to the owner. Take the well known brand "Uneeda," used by the National Biscuit Company. By advertising that name has become a household word. No patent right could ever have become as valuable to the National Buscuit Company as this trade-mark.

There is probably no article on the market having any considerable sale which is not protected by a trade-mark. In most instances, the trade-marks are registered in the United States Patent Office. Not that it is absolutely necessary that they should be registered, but because the owners of the marks believe that the comparatively slight expense of the registration pays them, particularly since certain advantages accrue the owners of the mark through the registration.

The instance we have noted, proving the great value of trade-mark rights, should not be lost sight of by parties who wish to put a new article on the market. It is always best to select a fanciful or non-descriptive mark, and particularly one which is susceptible of exclusive appropriation. It is also advisable to have the records of the Patent Office searched in order to see whether any one has registered a similar mark for the same class of goods. This precaution should be followed in order to avoid conflict in the future.

Sun as Motive Power.

One of the dreams of inventors has been to utilize the force of the waves and of the sun, as power. Tide motors have been constructed with more or less success, and now an apparatus has been designed that is said to utilize directly and effectively, the rays of the sun. The plant, which is located in Philadelphia, consists of an absorber, a low-pressure steam engine, a condenser and auxiliaries. The absorber is composed of a series of units, each containing a flat metal honey comb water vessel, rectangular in shape and closely resembling a large waffle. This vessel is enclosed in a flat wooden box, covered with two layers of glass having a one-inch air space between them. The under side of the box is insulated against heat loss downward by a two-inch layer of cork, and two layers of cardboard, so treated as to be waterproof. The boxes are supported about thirty inches above the ground, and so mounted that they can be inclined perpendicularly to the sun at noon. The adjustments of inclination need be made only once in three weeks.

Mirrors are mounted on two sides of the boxes, so that more rays may be caught, reflected upon the surface of the water vessel, and absorbed. The vessels are connected at one end to a feed pipe from the water supply, and at the other end to a steam pipe. The steam pipes from the various units are connected together and empty into an eight inch main, which conveys the steam to the pumping engine. The latter is a low-pressure, reciprocating engine of great steam economy. Connected with it is a surface condenser of ordinary type and auxiliaries such as may be found in any condensing plant. The water from the condenser is pumped back into the absorber. In its present latitude, the pumping capacity of the plant is 3000 gallons per minute, lifted to height of thirty-three feet, or approximately 25 horsepower. The machine was kept running continuously for several weeks, and during that time pumped several millions of gallons of water by power obtained from the sun alone. In a hotter climate, it would of course be more efficient.

Cylindrical Life Boat.

A motor life boat that is cylindrical in shape and is said to be non-capsizable and non-sinkable, is being exhibited at Toronto, Canada. The boat, which resembles a torpedo in appearance, dives from the ship, end foremost, when launched. It is made up of two cylinders, one enclosing the other, the outer one revolving freely with the action of the waves, and being twenty-four feet long and seven feet in diameter. The inner cylinder, in which the passengers and the propelling mechanism are carried, is six feet in diameter and eighteen feet long, and is suspended at its ends by the bulk heads in the cone ends of the outer shell. No matter how violent the rolling action of the outer part, the passengers are protected by the force of gravity acting on the inner cylinder. Forty persons, it is said, may be held in this compartment. In order to supply them with fresh air, the bearings leading into the inner shell, or cradle as it is called, have a hollow center, through which runs an air tube with the outer end curved upward two feet, so as to be well above the surface of the water. At the inner end of the tube is a small pump, which, worked by the passengers, draws in the fresh air. The exhausted air is expelled by an ingenious arrangement of valves which automatically close when the cylinder to which they are attached revolves them beneath the water level. A number of these valves are always above the water line and open to the air. In the engine installation, the exhaust is carried through the bearings to the open air. The connection of the propeller through the turning outer shell with the engine in the cradle depends on gear wheels. It therefore revolves independently of the relative position of the two cylinders.

The launching device is one of the new and advantageous features. Instead of having to be lowered by tackle over the ship's side, where boats are often crushed by angry seas, the lifeboat rests in a cradle from which it slides head foremost, diving into the sea when released. The boat was launched at Toronto with passengers inside, and these experienced no inconvenience.

Recording Sound by Photography.

To photograph the human voice has long been the dream of inventors, says *Popular Mechanics*. To do away with the intermediary of stenographers, by enabling dictation to be fixed automatically, is indeed a fascinating idea, likely to appeals to many minds. Fancy all the shortcomings of stenographers, and the chance of typing mistakes, being done away with and the faithful and automatic record of the phonograph substituted. Some inventors have indeed gone so far as to expect from that wondrous machine an automatic reproduction in plain type, heedless of the fact that there is no intrinsic connection between spelling and sound. But there are others of a more practical bent of mind who would be content with some sort of tracing, even in the shape of a curve, provided each sound be recognizable to the eye of the skilled observer. This aim has been obtained, and phonograph records already allow some of the vocal sounds to be distinguished by the eye. By further improvement along this line, it is conceivable that these records might be made as readable as ordinary writing.

One drawback to the method was that vibrations of the phonograph stylus would more or less alter the original character of the voice, as shown by the jarring noise that accompanies any phonographic performance. A photographic process has been substituted for the stylus in the new method. The small end of the horn is closed by a membrane, the vibrations of which are transmitted to a mirror which is pivoted. A beam light is thrown onto the mirror, and this reflection, passing through a slit in the screen, impinges on a photographic film which is moved along at a uniform speed. While the membrane is at rest, the beam of light will trace on the film a straight band of constant width, but as soon as it begins to vibrate under the influence of sound, the reflected beam is cut off more or less by the slit in the screen, so that the record on the film takes the shape of a succession of dark spots and stripes of varying length, corresponding in outline to the sound pronounced in front of the phonograph horn.

The original film is then printed against a second film of bichromated gelatine, from which a perforated record may be obtained by well known photographic processes, and this can be used to reproduce the original sound without any disturbing secondary noise. Such a record may be called the photograph of the sound.

The reproducer comprises a chamber connected to a source of compressed air and with a very narrow slit in its curved outer surface, upon which the phonographic film is made to run. The slit is arranged so as to be entirely open when the highest part of the perforated sound record passes before it, and quite closed when the sound wave decreases to zero. The air stream issuing from the slit thus varies in accordance with the shape of the sound record on the film, and the original voice is reproduced without the scratching noise characteristic of the ordinary phonograph.

Canning Music.

The music roll used in mechanical pianos is a familiar object to most persons, but its manufacture involves far more than a simple translation of a music score into perforations in a piece of paper, as on first thought might appear to be all that is required. Except in the case of certain classics, the music of which is full enough without any doctoring, says *Popular Mechanics*, a piece to be played on a mechanical piano must be edited and elaborated by an expert, for otherwise it would sound pitifully thin and tinny when played by an unthinking piece of mechanism.

There are many varieties of mechanical piano players. In a typical kind there is a tracker-board containing longitudinal slots under each of which is a pneumatic tube leading to and controlling the action of a lever or "finger" which terminates in a leather-covered hammer for operating one of the piano keys. The music roll contains perforations corresponding to the notes to be played, and when one of these perforations comes opposite one of the slots or holes in the tracker-board, a free passage is made for a draft of air which operates the finger, and thus the note is played. The air draft is created by the action of the performer's feet on a pair of bellows. The note is held until the perforation is passed, the length of time depending on the size of the hole.

It can be readily seen that the man to whom is entrusted the editing of the music for the mechanical piano must have as thorough knowledge of harmony and composition as the original composer, if he is to give anything like a just interpretation of the latter to his audience. He must also thoroughly understand the needs of his instrument and should also be master of several other instruments, for often he does his arranging from the orchestral score. The work offers to a competent musician with a mechanical turn the same opportunity as the editorial department of a musical publishing house.

Seated at an arranging machine with a piano keyboard, the musician applies by a touch of his foot to a treadle, the power of an electric motor. This sets in motion a drum at the back which revolves with clicks like a stock ticker, but carries an 8-inch paper in place of the ribbon. He plays the music as he would on an ordinary piano, only more slowly, choosing his notes and inserting others as he goes. If he wishes to record a half-note, for instance, he presses his finger on the key and counts eight clicks. There is no other sound, but on the paper appears a vertical row of eight perforations. This narrow "master," as the paper roll is called, is then run over the tracker-board of a machine which also responds with punches instead of notes. It perforates two rolls, one a heavy paper used for reproduction, and the other a thin test roll. The latter is tried on the piano and corrected by the musician.

From this the heavy master, too thick for the tracker-board of the piano, is corrected by hand. Its extra perforations are pasted over, and missing ones inserted with a mallet and punch. It is then run through a machine which changes the round perforations of the master to slits where necessary, at the same time reproducing the corrected master upon ten other strips of paper. Each of these strips unwinds from its own large roll, and rewinds, its perforations complete, upon the familiar black spool which is inserted in the piano. All the rolls then go to the marking table, where they are spread out two at a time, and the dotted expression lines put on by a semi-automatic marking machine. Words in regard to expression are printed by means of rubber stamps, the guide being a roll that the musician has marked. The rolls are then rewound by means of a hand reel, and carried to the inspection tables, where they are checked over for blemishes. They are then spooled, labeled, tested and boxed to await shipment.

Perforated music is not a special invention for the mechanical piano. It has for years been used in the humble hand organ, and early patents are held by Italians. By recent legislation the composer whose music is adopted for the mechanical piano is entitled to royalty.

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Heat exchanging device...E. Pielock et al.
Heating pad, Electric.....W. S. Clark
Heel.....L. H. Shaw
Hinge.....B. V. B. Dixon
Hinge.....B. F. Orear
Hoisting apparatus, Electrically-operated..F. E. Lutz
Horseshoe calk.....A. Roth, Jr.
Hose nozzle and sprayer.....R. Porter et al.
Hot water heater, Instantaneous.....T. H. Stephenson
Incandescent mantle burner...A. P. Storrs
Index, Adjustable card.....J. H. Rand
Ink distributor.....A. E. Berreyesa
Insect catcher.....J. Johnson
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Internal combustion engine.....F. Forest
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Irrigating connection.....G. E. Kellar
Jolting machine.....W. C. Norcross
Key socket.....E. H. Freeman
Kite.....O. Seydel
Knitting machine.....W. F. Rolston
Knitting machine, Straight.....W. F. Rolston
Ladder base.....W. Rogers
Ladder brad.....F. W. Chickering
Lamp, Acetylene gas.....J. Davis
Lamp cord adjuster.....C. G. Ochiltree
Lamp, Electric incandescent....O. Schaller
Lamp package, Tungsten.....W. Lumley
Lamp shade holder or guard, Incandescent.....W. Ifland
Lamp socket, Incandescent.....P. Kleber
Lamp sockets, Attachment for incandescent.....N. Klein
Lathe cone center.....T. H. Mack
Lavatory fixture.....E. G. Watrons
Leather waterproofing compound.....P. F. Frost
Life saving apparatus...D. Brevetti et al.
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Loader.....E. and A. Butts
Loading device, Portable.....A. Vollers
Lock for mail bags, &c.....J. Sackett
Log loader.....A. Larson
Loom.....J. W. Herbert
Lubricator.....G. Tugwell
Lubricator.....G. Tugwell
Lug strap connector...F. McCollum et al.
Magnet actuated device.....D. H. Darrin
Mail matter registry receipt..L. V. Spollin
Mangle for small articles.....S. Moe
Manhole and catch basin cover.....R. J. McNulty
Mask, Baseball.....D. C. O'Shea
Matrix drying press....W. S. Hadaway, Jr.
Measuring and calculating machine.....E. A. Luster
Measuring surface areas, Machine for.....W. T. Hollis
Meat cutter.....W. Walker et al.
Mechanical movement.....T. A. C. Both
Mercury converter.....R. B. Ingram
Metal tubes, rods, &c., Apparatus for galvanizing F. Werth
Meter box cover.....J. P. Ryder
Milking machine.....G. E. Gane
Moistening and separating stamps and the like, Apparatus for.....L. Katzenstein
Moistening machine, Strip.....M. Himoff
Motor controller.....T. E. Barnum
Motor controlling device....T. E. Barnum
Motor winding, Induction....C. W. Starker
Mouthpiece sanitary attachment...L. Bloek
Mowing machine, Vertical cutter attachment for.....O. Klnge
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Music leaf turner.....P. Folan
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Music spool head.....W. S. Pain et al.
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Nut lock.....A. M. Heath
Nut lock.....J. L. Tinnin
Offset device.....J. E. Miles
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Oil burner.....A. R. Kunkel
Oil can.....T. W. Alexander
ω-para-alkyloxyphenylethylamins and their n-alkyl derivatives, Producing.....G. Reinieke
Opener and lap machine.....J. C. Potter
Ordnance explosive charge.....H. Maxim

Package, Sealed.....J. W. Henson
Patient supporter.....C. Madsen
Pegwood sharpener.....A. C. Fisher
Pencil sharpener.....E. B. Welles
Persimmons, &c., Treating Japanese.....H. C. Gore
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Piano, Chime.....J. Richmond
Pilot house light.....J. H. Buxbaum
Pipe coupling.....H. W. Clark
Pipe joint, Swivel..N. F. Niederlander et al.
Pipe laying machine.....M. H. Keeler
Pipe tapping means.....C. W. Metcalf
Pipe thawing, Electric heater for.....T. Abtmeyer
Pipe wrench.....J. Maher
Plaster division strip.....G. S. Knapp
Platform adjuster.....T. R. Teller
Plow, Gang.....A. B. Neugardt
Pocket clip.....M. Marcucci
Polishing machine.....E. E. Barnes
Pounding-up, leveling, or smoothing roll.....A. Bates
Press.....E. Honegger
Press feeding mechanism shifting device.....W. P. Bettendorf
Pressure control apparatus, Duplex.....H. M. P. Murphy
Pressure control apparatus, Duplex.....W. V. Turner
Pressure controlling mechanism.....J. S. McWhirter
Printing machine gripper mechanism.....E. W. Cooper
Printing plates, Preparing.....G. H. Lund
Printing press.....J. Raich
Projectile, Explosive (3 pats.).....F. I. Du Pont
Protecting the members of a court assembly, Device for.....R. Lux
Protein from insoluble protein matter, Production of.....S. A. Vasey
Proteins soluble, Rendering vegetable.....H. Walland
Pulley, Expansion.....M. M. Karr
Pulling over machine.....H. A. Ballard
Pulp machine.....W. H. Judson
Pump for lifting granular materials, Pneumatic E. Koltschanoff
Pump, rotary engine, and the like, Rotary.....W. A. Beard
Pumping apparatus.....X. Caverno
Punching holes in metal, Machine for.....H. Ainsworth
Push button and pump, Pneumatic.....G. A. Kenner et al.
Puzzle.....P. G. Feeney
Rail fastener.....K. Sztejnert
Rails, Anticreeping device for.....A. J. Dinklage
Railway safety system.....A. Minnick
Railway and signaling apparatus, Automatic electrical.....R. P. Brousson
Railway tie.....C. D. Green
Ram, Hydraulic.....A. H. Francfort
Razor stropping device....J. B. Brockhurst
Refrigerating apparatus.....R. M. Hunter
Rifle bore cleaner.....D. Strickler
Road leveling device.....N. S. Monroe
Rock drill.....T. F. Carroll
Rock drill engine.....B. Hastings
Rotary engine.....W. L. Ripsom
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Roundabout F. Miller
Saccharine substances, Extraction of.....C. L. Corcuera
Saddle.....C. A. Persons
Safety brake, Mine carriage and elevator automatic.....G. von Daam
Sardines, Packing.....W. E. Taylor
Saw support, Undercutting.....J. B. Perry
Saw swage.....J. F. Pribnow
Scaffolding bracket.....H. E. Loebel
Scoop, wheel.....M. L. McCrary
Scraper and leveler.....R. H. O'Neill
Separator.....I. Blount
Sewing and trimming machine.....C. W. Thomas
Sewing machine seam trimmer and edge-binder.....W. R. Abercrombie
Sewing machine strip folding and guiding attachment A. Laubscher
Sewing machine thread cutting mechanism. (2 pats.).....D. Mills
Shade holder.....A. C. Rader
Shaft coupling.....J. A. A. Payen
Sharpener, Tool.....L. Johnson
Sheet metal house, Portable..C. D. Pruden
Sheets or webs, Means for controlling and directing moving.....G. F. Read
Shoe, Adjustable ice...W. H. Morris et al.
Shoe tacking machine.....H. A. Ballard
Shoes, &c., Fastening device for.....J. F. Atwood
Shovel point.....H. W. Snyder
Signaling and telephone system.....H. O. Rugh
Silo hoop fastening means..C. W. McClure
Skiving machine.....L. W. G. Flint
Sleeve, Splicing.....J. Riddell
Slicing machine.....F. Graff
Small arms, Practice apparatus for.....H. B. Hollifield
Snap switch, Pendant....F. C. De Reamer
Soda, Obtaining carbonate of.....N. Wrinkle et al.
Soldering machine.....W. H. Gibbs
Solenoid.....C. J. Anderson
Sound producing device.....B. P. and F. I. Remy
Sound producing device.....J. P. Northey
Spark arrester.....W. R. Hall
Spark arrester.....C. F. Clawson
Spark plug.....A. Schmidt
Speed changing mechanism....H. L. Beeler
Spraying device.....S. Stephens
Spraying device.....H. E. Brandt
Spring wheel.....J. Corbin
Stacker, Bale.....A. Brunelle
Stairway, Moving.....G. A. Wheeler
Stall, Adjustable.....O. B. Stillman
Stamp mill.....E. Sheffield, Jr.
Stamping machines, Sheet feed apparatus for typographic.....M. E. Blume
Steam boiler.....E. Boelzner
Steam engine.....E. W. Conkell
Steam generator regulating apparatus.....P. F. Silliman
Steam productiou, Regulating and controlling E. Thomson
Steam production, Regulation and control of E. Thomson
Steering moving objects, particularly ships and flying machines, Apparatus for.....V. Alexieff
Stock releasing apparatus..G. M. Goodnight
Stove heating.....E. J. Parker
Stoves, Safety stand-pipe for gasoline.....G. H. Burgess
Strainer and support therefor, Milk.....H. J. Ebner
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Stuffing box, Double packing..U. A. Haaser
Sugar crystallizer.....F. Lafeuille
Superarenal glands, Producing a metallic derivative of the active principle of the.....J. L. Turner
Syringe, Hypodermic.....J. T. Greeley
Syringe, Vaginal.....G. J. Kelley
Tablet holder, Sketch.....A. Scott
Tabulating, back spacing, and key connecting mechanism.....E. Parmley, Jr.
Tea strainer.....H. D. Smith
Telephoue and telegraph combination system.....C. L. Bopp
Telephone circuit and repeater, Automatic.....C. Adams-Randall
Telephone circuit and repeating apparatus.....C. Adams-Randall
Telephone disconnector.....C. G. Fields
Telephone system, Multiple repeating.....C. Adams-Randall
Thinning machine.....S. Stone
Thread waxing device.....F. Ashworth
Threading tool.....J. M. Carpenter
Tire casing inner tube.....W. C. Beckwith
Tire setter.....C. A. Devero
Tires, Manufacture of resilient..G. D. Rose
Tobacco box.....H. Penney
Tool.....J. Carr
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Tower or derrick, Steel.....L. C. Moore
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Track sanding device, Automatic.....F. P. Livingston
Transmission of intelligence, Means for.....W. E. Frow
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Trolley wire connector.....J. Kirby et al.
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Truck, Shop.....J. C. Larson
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Typewriting machine.....A. W. Smith
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Typographic record sheets, Apparatus for producing.....M. E. Blume
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Valve.....G. Brocke
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Valve gear.....O. A. Donath
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Vapor energy into work, Means for converting.....E. J. Christie
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Vehicle brake.....A. I. Carnine
Vehicle canopy bows, Bracc for.....A. A. Steckel
Vehicle guard.....C. S. Barber
Vehicle seat, Auxiliary.....L. A. Hazen
Vehicle wheel.....A. Williams
Vehicle wheel.....C. F. Heinss
Vehicle wheel, Motor.....A. T. Beeler
Velocipede spring frame.....H. A. Shelton
Vessels, Inside closure of air, steam or water tight.....C. W. Shields
Wagon loader.....C. L. Samp
Wagons, Wear attachment for.....B. F. Gerelds
Wall case.....G. E. Palmer
Watch or clock spring carrier.....M. M. Riglander
Water elevator.....S. Murta
Water heater.....D. Popa
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Wood, Preserving.....E. Marmetschke
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Issued February 6, 1912.

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Air withdrawing or vacuum producing apparatus, Portable.....A. M. Jack
Airship.....J. R. Porter
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Alkali metal from oxygen compounds of alkali, Producing H. Mehner
Alloy, Iron, nickel, copper....G. H. Clamer
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Bath trap.....P. F. Lyons
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Bearing, Roller.....J. C. Barber
Bed bottoms and the like, Fabric tightener for.....W. A. Poulnot
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Belt tightener.....J. H. Sewall
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Boats or ships and the like, Holding and disengaging gear for the.....T. I. Macaulay
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Bolt holder.....J. A. Schlehr
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Boring machine.....R. L. McDaniel
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Bottle holder.....E. Dixon
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Bracket.....A. A. Warner
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Brick, tile, or analogous article and making same.....A. Malinovszky
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Buffer beam (2 pats)....C. T. Westlake
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Calculating machine.....N. R. Long
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Car friction, buffer, Railway.....T. L. McKeen
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Car replacer.....M. L. Strother
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Caster, Table.....E. C. Henrikson
Catalysts, Apparatus for producing.....M. Wilbuschewitsch
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Cattle tie.....F. H. Leathers
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Cigarette machine.....W. S. Ives
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Circuit controlling device...W. B. Hodges
Clamp and gage.....J. J. Woodman
Cleaning device, Suction.....H. Koch
Cleaning tool.....I. H. Spencer
Clock, Electric program.....A. L. Rohrll
Clock system, Electric.....R. D. Hector
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Clothes washer.....M. G. Evans et al.
Clutch for automobiles and the like.....A. B. Morse
Clutch for power presses, paper cutters, &c., Safety.....L. H. Brown
Clutch mechanism.....C. Seitz
Coat hanger for wardrobe trunks.....F. H. Parkhurst
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Cock lock, Gas.....J. J. Comer
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Coil forming machine.....A. L. McHugh
Collar shaping machine, Fold.....E. H. Worthington
Collective system.....H. Siedentopf
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Computer and register, Mathematical.....E. Attaway
Concentrator, Dry.....C. W. Edgar
Concrete construction form.....J. Elsmere
Concrete container, Metal...I. A. Braddock
Concrete mixer.....A. D. Hadsel
Concrete mold.....H. O. Meck
Concrete structure, Reinforced..M. Mingay
Concrete structures, Spacing device for reinforcing rods in.....W. H. Burk
Condenser, Double pipe....L. C. Schneider
Controlling mechanism.....D. Larson
Cooking utensil.....I. Larson
Cooling and vending machine attachment.....G. T. Bailey
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Corns and Calli, Safety trimmer for.....J. A. Makarhof
Cotton chopper and cultivator.....H. C. Bickers
Cotton gin roller.....F. A. Diffenderfer
Cotton press tramper.....N. W. L. Brown
Cotton scraper standard brace.....H. F. Carter
Counting of money, dealing cards, turning leaves, &c., Device for facilitating.....G. H. Rives
Crane, Safety.....W. F. Klaus
Crate, Folding.....M. Rinner
Cream separators, Adjustable cream exit for centrifugal.....G. M. Anderson
Creel.....J. P. Cronin
Cross-tie.....L. C. Mooney
Crossing signal.....T. A. Grist
Culvert.....J. H. Schlafly
Culvert sections, Means for joining.....A. G. Felker
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Dehairing mechanism, Carcass.....A. Hannaford
Dental swage.....J. B. Sedberry
Dextrin, Manufacture of.....J. Verity
Diaphragm.....F. B. Meech
Die press.....A. W. Roovers
Disinfectant or insecticide container.....G. D. Snell
Display cabinet.....J. A. Douglass
Display device.....J. M. Danheiser
Distributing flat bodies, Apparatus for.....F. Ruppel
Door hauger.....A. Perlman
Draft rigging for rolling stock..M. Straub
Drawer and file holder.....G. B. Meleney
Drier.....W. Landes
Drilling machine.....J. N. Brattain
Drinking fountain.....H. N. Roden
Drinking fountain, Public.....G. B. Stack
Drum and cymbal beater, Foot operated bass J. A. Meyer
Dye and making same, Anthracene.....O. Bally
Dye and making same, Vat....A. L. Laska
Dye or stain.....L. N. Sahm
Dyestuff and making same, Monoazo.....H. Wagner, et al.
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Egg tester.....J. Carr
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Electrolyte, Means and method for preventing depletion of.....T. A. Edison
Electroplating apparatus.....T. A. Edison
Elevator safety device.....R. C. Smith
Embroidery work holder.....J. R. Wilkins
Engine crank shaft, Steam....H. A. Ivatt
Engine starting device, Explosive.....F. Reynolds
Engine starting device, Internal combustion.....E. K. Baker
Engines, High tension magneto ignition apparatus for internal combustion.....A. M. Patton
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Explosion motor.....P. Daimler
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Feeder, Automatic poultry.....W. A. Kraxberger et al.
Fifth wheel, Vehicle.....E. Pryor
Filaments for incandescence lighting, Manufacture of metallic.....C. H. Weber
File, Document....A. B. and C. L. Johnson
Filing cabinet.....F. F. Burton
Filing device, Letter.....C. Smith

Filter, Faucet.....L. A. Mason
Fire alarm box, Auxiliarized....F. W. Cole
Fire escape.....E. Snyder
Fire escape.....A. Perlman
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Fireplace screens, blowers, and window-sashes, Means for balancing frames for.. L. F. Eisele
Fish line holder.....E. B. Schmucker
Fishing reel.....P. Catucci
Fishing tool.....C. Daniel
Floor dressing tool.....W. A. Scott
Floor scraper.....F. J. Vondracek
Floor set, nail set, and nail shield, Combined.....W. T. Wellman
Flour bolter or dresser.....E. W. Mihok
Flower holder.....J. W. Golden
Flue turning and beading tool..J. F. Gero
Flushing apparatus for water pipes..... G. W. Redeker
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Form, Collapsible.....H. O. Meek et al.
Frame corner piece.....J. L. Kuntz
Fruit and vegetable scarifying device..... J. G. Lannoye
Fruit picker.....J. H. Wyatt
Furnace charging apparatus.....D. Baker
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Fuse, Electric safety.....C. N. Sachs
Fuse for explosive projectiles, Percussion.. E. Schneider
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Game.....N. C. Shatzer
Garment.....F. N. Ashworth
Gas burner, Fuel.....J. C. Beckfield
Gas generator, Acetylene.....J. Corroyer
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Gas purifier.....R. Robinson
Gases, Apparatus for the detection of dangerous.....F. J. Turquand et al.
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Gate.....C. E. Buckhalt
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Glassware handling apparatus..... V. Mulholland
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Handle mechanism.....N. W. Perkins, Jr.
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Heating systems, Pressure governor for... G. Smith
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Hinges, Applying.....A. S. Lowden
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Hoder.....M. B. Morgan
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Horseshoe.....W. Ruff
Horseshoe calk attachment.....R. Paton
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Hose nozzle holder, Adjustable..... C. J. Lindquist
Hydraulic jack.....F. I. Joyce
Ice cutting apparatus.....F. B. Clark
Ice motor.....A. Grub
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Indicator gage.....J. E. Emerson
Injector.....C. Pottel
Inkstand.....I. Rosenfeld
Insect destroying apparatus, Electrical (6 pats).....F. S. Smith
Insect gathering machine....T. J. Wheeler
Insects, Destroying.....F. S. Smith
Instrument case, Antiseptic..... E. A. Teets et al.
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Issued February 13, 1912.

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Issued February 20, 1912.

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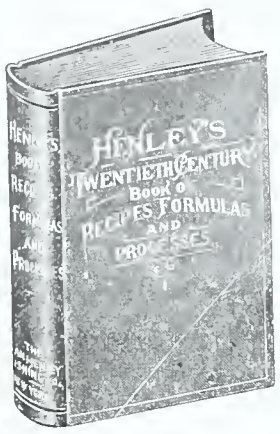
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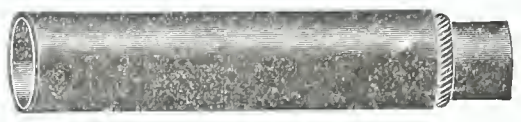
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TAMPING MACHINE DOING WORK OF TEN MEN.

By FRANK C. PERKINS.

THE power tamping machine shown in the accompanying illustration is driven by a gasoline motor, and was designed to perform by power that laborious work which, as every superintendent of streets, sewer, gas and water mains knows, is almost impossible to have done in as satisfactory a manner by hand methods. By machinery this work is accomplished at a more reasonable cost, and the machine is found to be especially valuable where it is necessary to open trenches in streets that have been improved by pavement. With the backfilling tamped by the power machine, there need be no fear of the pavement settling over the trench, and the pavement may be replaced at once, enabling the work to be completed without waiting for the trench to settle.

The gasoline tamping machine is a very simple device, and consists of the sweep on which is mounted the lifting mechanism, the engine, and the two-wheeled truck on which is mounted the sweep. The sweep of the machine is built of two 3-inch steel channels, with the necessary spacers, bracing and truss rod. The sweep is mounted near its center of gravity, on a saddle casting, which has a bearing on the truck axle and swings in a horizontal direction on the pivot, thus moving the tamper across the work.

The movement along the work is accomplished by moving the truck forward about eight inches for each complete swing of the sweep. The truck of the machine has 4 x 46 inch steel wheels and a 1½-inch steel axle, arched. The truck frame is formed of one piece of angle steel, with an angle cross bar riveted to the frame and legs which are also of angle iron, the bracing being 1¼ x 1¼ inch angle.

The steel axle spindle is cast into a square socket through which passes the vertical leg of the axle. The axle at this point is provided with about eight inches of vertical adjustment, and a like amount of adjustment is provided in the cast iron shoe on the bottom of the truck legs. This adjustment allows the machine to be operated with one wheel on the curb or other unlevel surface, and is a valuable feature when the machine is required to work close to the curb.



GASOLINE TAMPING MACHINE IN OPERATION.

The lifting mechanism is unique, being very similar to the well known board drop hammer used for years in drop forged shops. The mechanism as applied to the power tamping machine is even more simple than the drop-hammer. It consists of two parallel rolls mounted on shafts running in bearings bolted to the sweep. The rolls are geared together by spur gears, and are driven by a pinion gearing into the gear on the rear roll. The driving shaft runs in bearings bolted to the sweep.

It will be noted that the rolls and shafts are kept in line, and adjustment made by steel tie-rods which pass through all of the bearings and have nuts and lock nuts on each side of each bearing. The front lifting roll is pressed against the lifting board by coiled springs on the tie-rods, passing through the bearings and adjusted by nuts and washers.

The length of stroke as well as the gripping and releasing of the lifting board is automatically regulated by cutting away a part of the circumference of the lifting rolls, thus causing the board to be automatically gripped, raised and released, once for each revolution of the lifting rolls.

The lifting board is of hardwood reinforced with a small steel channel on the edges. The lifting board slides in long steel channel guides riveted to the sweep channels with a heavy gusset-plate and braced from the top back to the sweep. Mounted in the gusset-plate just above the lifting rolls is a pair of grips or dogs, which are connected by a short lever or bell crank. These grips are normally pressed against the lifting board by a coil spring acting on the bell crank. When the lifting board is in motion, the grips are held out of contact with it by a small rod and latch placed near the left hand of the operator.

When it is desired to stop the motion of the tamper, the latch is released and the grips prevent the board from falling, but allow the lifting rolls to raise it the length of the stroke at each revolution. While the board is prevented from rising above the fixed point by a reduction in the thickness of the board near the lower end, they do not grip the board when the reduced section rises to the center of the rolls, and it thus remains in this position until it is released by the operator.

The gasoline engine used on this machine is very simple and reliable. It will develop about one and three-eighth horsepower on the tamper, weighing up to 100 pounds, and requires one and a half gallons of gasoline per ten hours.

With this machine, using a tamping head 8 x 9 inches in area, two laborers

can tamp from 1,200 to 1,500 square feet of surface per hour. On trench work the machine will tamp ten layers in from 40 to 50 lineal feet of trench (30-inches) per hour, making one pass over each layer.

The machine will strike any square inch in a trench from one to four feet wide. It will strike any point at any level from one foot above surface to six feet below, the number of blows per minute being 50 to 60. The length of stroke is two feet and the weight of tamping head is 80 to 90 pounds.

The machine has a ten-foot lifting board, which will allow the tamper to reach a depth of six feet below the surface. On account of the powerful blow struck by this machine, this will be found to answer for a depth of 8 to 9 feet. Where the conditions require it, the lifting board is made in any length up to about sixteen feet, which will allow the tamper to reach a depth of twelve feet below the surface. When the board is made longer, the weight is brought down to about 100 pounds, and the head is sometimes made of steel angles and plate.

When the machine is to be used on surface work alone, the sweep may be mounted on a narrow truck which will allow the tamper to cover an area wider than the overall width of the truck, thus tamping a track for the wheels, and enabling the machine to clear fences, gates and posts, when used on sidewalk work. For extra wide trenches, the truck has a wider gage, and is of heavier material to meet the requirements. The sweep may be changed to either truck in a few minutes by removing four small bolts, and either truck may be used on any kind of work.

It is stated that while one man can handle the machine on small trenches and surface work where the footing is good, on trenches that are wide or where the footing is soft, two laborers are needed, one man on each side of the machine, where they will be in best position to keep it moving along.

This machine with two men to handle it should do as much work as from eight to ten men using the hand tampers, as it will not shorten the stroke or reduce the number per minute, this being automatically regulated, and the operators can give their whole attention to moving the machine over the work.

How to Get Copies of Patents.

THE INVENTIVE AGE prints each month a list of the patents granted by the Patent Office. This list includes the name of the inventor, the title of the invention and the date of the patent. Anyone can procure through THE INVENTIVE AGE a copy of any patent included in the list, by giving the data and enclosing ten cents in stamps for each copy. There is no better way of keeping yourself informed about the progress of the arts than by scanning the list each month and ordering copies of patents.

Live Batteries.

A study of electric fishes goes far to convince one that all our nervous system is electric, and this is true throughout the animal kingdom. No other medium is instantaneous enough to transmit the will of the mind to the muscles, says *Popular Electricity*, and by the electric current anyone can be deprived of the control of his own nerves. Witness the total disability of a person holding the electrodes of a battery, to let go.

The electric batteries of the famous electric eel, the torpedo rays, the electric catfish of the Nile, and the queer elephant-nosed fishes of the Congo, are all built on the same plan. The motor plate which terminates all nerve-ends in ordinary animals is enormously developed: thousands of these motor plates are assembled, all feeding by branches into a few large nerves: and the plates are insulated in series of thousands of cells, filled with a jelly-like fluid and formed out of ordinary muscle tissues into hexagonal or flat or longitudinal cells. Each plate has a ramification of nerve tissues on the back of it, and each is provided with a minute artery and a vein for maintenance.

The action of the mind, if it may be so termed, of any of these fishes can induce a state of static pressure on the face of the plates, and can alter the strength of the electricity drawn from the battery at will. He can give you no shock at all, or a little one, or one so violent that you will be more than four hours in getting back possession of your faculties in the stunned part. If you take a torpedo ray, used from long captivity in an aquarium to the presence of man, and stroke him lightly, he will pay no attention: but irritate him, and you will receive a shock such as will paralyze your arm for a day.

Baron von Humboldt's account of the methods of the capture of the eel by the Indians of the Orinoco is of interest. The plan is to drive a number of wild horses into a pool infested with eels, and to permit the latter to exhaust themselves in attacking the horses, when they become unable to further discharge electricity, and can be easily taken. The horses are prevented from escaping from the pool by men with rods. The eel, more than five feet long, glides under the belly of the horse, attacking with its discharge the heart, the viscera and gastric nerves. It is not surprising that the effect upon a large quadruped should exceed that produced in a man. The horse, however, is not killed, but merely stunned, and after a number of shocks falls into a kind of lethargy, and sinks under the water. A few gain the shore and stretch their benumbed limbs on the ground.

Nature seems, in these fish, to have developed the feeble electric properties of the ordinary nerve system into a static battery of force enough to enable the fish to defend themselves against much larger foes. There is no doubt that the shock is a high-tension static discharge, as one experimenter obtained sparks by insulating a metal gap in a circuit shocked by a powerful eel. Yet to store any appreciable charge of static electricity at high tension requires the driest of apparatus and clear, dry weather for the static machine to operate. How can the eel raise this high tension in the midst of a good conductor like water, when we can hardly do it in dry air? And how can he direct it at his victim through the surrounding water, when we know that electricity always takes the shortest path through a conductor from a positive to a negative?

It is evident that he generates it by nervous action. The battery of the eel consists of four long bundles of plates occupying about one third of his bulk. These plates are thin nerve motor plates, separated by about one-twentieth of an inch, running parallel down the body from head to tail and set vertically on edge. Cross plates divide the surface into numerous cells, filled with a clear, jelly-like fluid. Ramifications of nerves spread over the entire surfaces of the plates. About 240 of these make up a battery for a full grown eel, giving a surface of 123 square feet of plate. The head end of the eel is positive and the tail negative. When we realize what a very powerful shock a Leyden jar of only a few square feet capacity can give, it is easy to understand the force of these live batteries. In a similar manner, the battery of the torpedo ray consists of perpendicular hexagonal prisms, extending from the top to the under side of the ray. These are placed one above the other, 150 to the inch, and are very vascular, each having a vein and an artery besides its own particular nerve.

As to the method of loosing the shock, it is probable that the eel, just before awakening the pressure in his batteries, closes his skin pores, so as to insulate himself. These pores normally exude a thick, viscous fluid, and when the pores are closed this would aid in the insulation. Equilibrium is restored by the oscillatory static discharge through the water to the other pole. While dynamic and static electricity are one and the same, the first is a flowing current and must follow the laws of conductors, while the latter simply requires means for its production and discharge, and is undoubtedly the method Nature has taken to make a weapon out of that mysterious animal electricity by which we all "live, move and have our being."

How to Extract a Splinter.

There are few of the small accidents of life that are more disagreeable than to have a splinter of wood stuck into the hand. It is often difficult to remove, and if a tiny sliver is left, it festers and becomes very painful. If the wood of the splinter is soft, it is not easy to pick out with a needle. A new method of extracting it has been devised, and will be welcomed generally. It involves the use of steam. A wide-mouthed bottle, such as a milk bottle, should be filled nearly full of water as hot as can be poured in without breaking the glass. The injured part is then placed over the mouth of the bottle, pressing down slightly, and preventing any steam from escaping. This will cause the flesh to be drawn down, and in a minute or so the steam will extract the splinter, at the same time relieving the inflammation. This simple method, which may be employed without inconvenience, is entirely effective.

BOOK REVIEWS.

The Principles of Scientific Management.

By FREDERICK WINSLOW TAYLOR,
Harper & Brothers New York, Publishers.

In view of the general discussion of greater efficiency in all lines of endeavor, this study of new and industrial methods will be found important and valuable. It is the system which was regarded as a discovery when Louis D. Brandeis declared that by adopting it, the railroads of the country could save a million dollars a day. The author has been working on the system in the workshops of Philadelphia, and elsewhere, for thirty years. In this book is, in reality, the birth of a new science—one which will go far toward revolutionizing present business and industrial methods. Wherever it has been adopted thus far, it has changed the relationship of the employer and the employee, and it has produced greater profits to the owner and more wages to the worker.

Mr. Taylor believes that the man is the main thing in industry. He believes that attention should be fixed upon the exact point of contact between man and nature—which is the point of life and of production. With the vast expansion of industry which has been going on it is, of course, impossible to return to the old, intimate, personal contact of employer and employee which resulted in highly skilled and efficient production. For that old rule of-thumb, rough and ready relationship, Mr. Taylor would substitute a science of management, based upon a thorough going, scientific study of the man at his job. He would establish standards of human labor; he would record the rules and define in exact terms every industrial activity.

Scientific management has now been introduced into many of the great factories and plants of the country: into railroad repair shops, printing establishments, bleacheries, cotton-mills, optical works, and many other manufacturing plants. Applied to brick laying, it has shown the possibility of revolutionizing the art, making it easy for a man to lay from two to three times as many bricks as before. Applied even to unskilled operations, like shoveling, its results have been amazing. In all these occupations it is producing a new spirit of co-operation between the employer and the employee; it enables the latter to earn more wages and to look upon his work not as drudgery, but with the pride of the true worker; and at the same time it enables the manufacturer to make greater profits. It is beneficial alike to small concerns and to greater establishments.

In his introduction, the author says: "President Roosevelt, in his address to the Governors at the White House, prophetically remarked that 'The conservation of our national resources is only preliminary to the larger question of national efficiency.' The country at once recognized the importance of conserving our material resources, and a large movement has been started which will be effective in accomplishing this object. As yet, however, we have but vaguely ap-

preciated the importance of the larger question.

"We can see and feel the waste of material things. Awkward, inefficient, or ill-directed movements of men, however, leave nothing visible or tangible behind them. The search for better, for more competent men, from the presidents of our great companies down to our household servants, was never more vigorous than it is now. What we are looking for, however, is the ready-made, competent man; the man whom some one else has trained. It is only when we realize that our duty, as well as our opportunity, lies in systematically co operating to train and make this competent man, instead of hunting for a man whom some one else has trained, that we shall be on the road to national efficiency.

"In the past the man has been first: in the future the system must be first. This in no sense, however, implies that great men are not needed. On the contrary, the first object of any good system must be that of developing first-class men, and under systematic management the best man rises to the top more certainly and more rapidly than ever before.

"This book has been written to prove that the best management is a true science, resting upon clearly defined laws, rules and principles as a foundation. And further to show that the fundamental principles of scientific management are applicable to all kinds of human activities, from our simplest individual acts to the work of our great corporations. And, briefly through a series of illustrations, to convince the reader that whenever these principles are correctly applied, results must follow which are astounding."

The Seven Follies of Science.

By JOHN PHIN.
D. Van Nostrand Co. New York, Publishers.
Second Edition.

The first edition of this book was reviewed in these columns, and now comes another and enlarged edition, containing a number of other problems and the discussion of an entirely new department of popular misconception and error. The author has received numerous personal letters which showed that a simple and popular view of the old so-called "scientific impossibilities" was needed, for very many of those who had heard of the problems discussed had the most erroneous ideas as to their real nature, although the principles involved are the foundation of almost all our scientific knowledge. The new edition gives, besides certain chess board and other arithmetical puzzles, the correction of many popular fallacies; for instance, that lightning never strikes twice in the same place; that the first fire was produced by the friction of branches of trees moved by the wind; that the tea kettle suggested to Watt the idea of the steam engine: that volcanoes are burning mountains: that the force of dynamite is always exerted downward: that steam can be seen; that hairs are tubes; that a decaying carcass breeds worms; that powdered glass is poisonous; that glass is very hard; that a man becomes of age on his 21st birthday; that the exception proves the rule, and a number of other common errors.

THE TELEMICROPHONOGRAPH AND MULTIPLEX TELEPHONY.

THE application of the telemicrophonograph to the transmission of speech, and the development of a multiplex system of telephony, are of the utmost interest. The telemicrophone instrument of F. Ducretet and E. Roger of Paris is shown in the accompanying illustration, Fig. 1. Fig. 2 shows the equipment of Ernest Ruhmer of Berlin, together with Poulsen arcs and transmitters of the system devised at the Ruhmer laboratory, for simultaneously transmitting several telephone messages over a single wire.

In Fig. 3, three synchronized pairs of transmitting devices are noted at

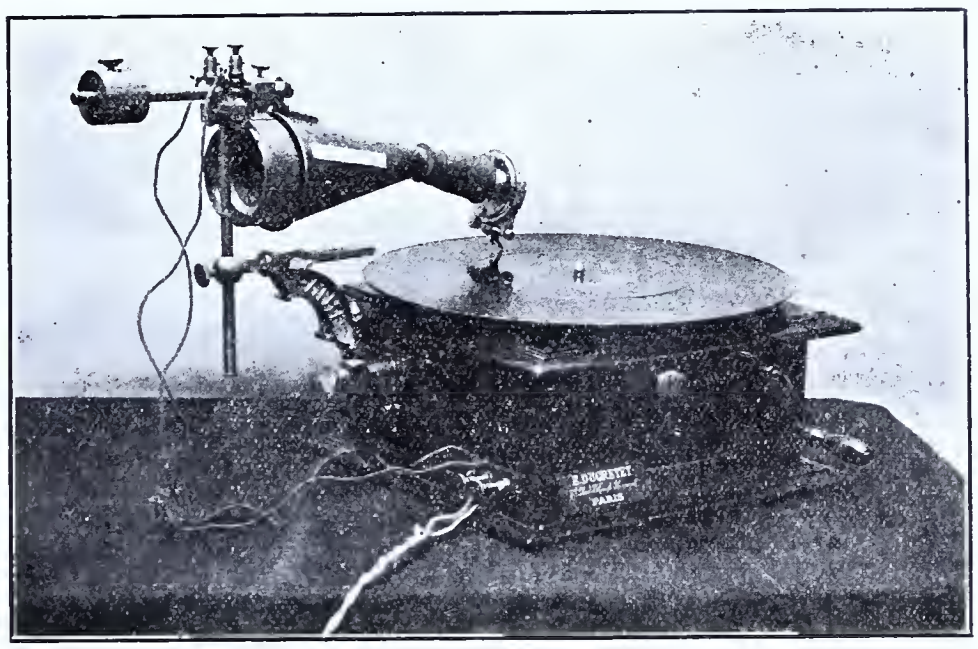


FIG. 1.—TELEMICROPHONE.

It may be stated that the electric oscillations are generated by Poulsen arcs shown in Fig. 2, the alternating currents of high and different frequency being analogous to those employed in wireless telephony, superposed on the line and separated at the receiving station.

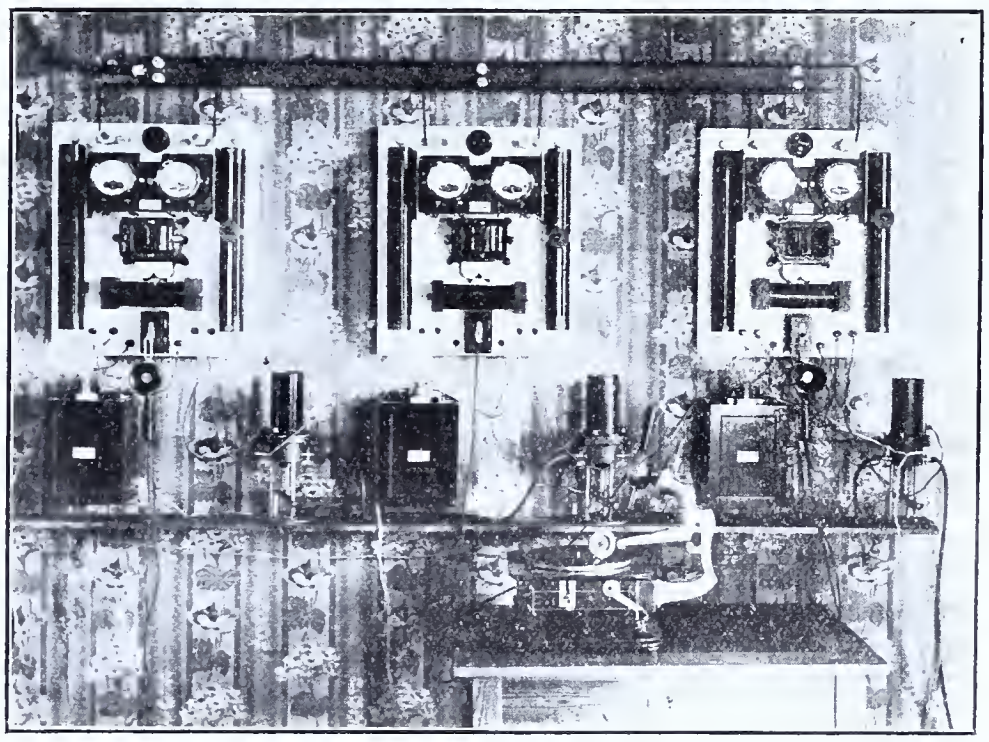


FIG. 2.—RUHMER EQUIPMENT.

It is of interest to note that each current acts upon the receiving instrument through the agency of an oscillatory circuit, attuned to the same pitch as the transmitting station oscillatory circuit producing that current. The accompanying diagrams, Figs. 3, 4 and 5, show the various electrical connections of three modifications of this system of multiplex telephony, in which the different receiving circuits are inductively connected with each other in a comparatively weak manner, so as to obtain a perfect reception of the messages. It is held that these arrangements assure the proper reception of the feeblest currents, and prevent confusion when a large number of messages are transmitted over a single wire.

the left, the receiving apparatus in three sets being indicated at the right. Electric arcs are connected in parallel with oscillatory circuits (numbered C L) in the transmitting apparatus, the frequency being regulated by the values of the capacity and the inductance at C and L, as these high frequency currents are produced by the electrical generators of this type.

It may be stated that the microphones M affect the intensity of the high frequency currents produced, the microphones being arranged in three different ways. As noted at the extreme left, the microphone is bridged across an auxiliary coil in the oscillatory circuit, while in the central synchronized pair of the transmitting circuit, the microphone is bridged across the terminals of the inductance coil L, and at the right it acts inductively on the feed circuit. Any method may be utilized, it is claimed, which prevents each microphone from affecting any transmitting circuit except its own.



FIG. 3.—DETAILED VIEW.

Each high frequency current at the receiving stations indicated at the right produces resonance in a synchronized oscillatory circuit L^1 C^1 (Fig. 3.) acting upon the telephone receiver P as in wireless telephony by means of a detector D, two arrangements of the detector and receiver being indicated as well as a third construction at the extreme right in Fig. 3, in which the messages are received directly by a current W, the detector being omitted.

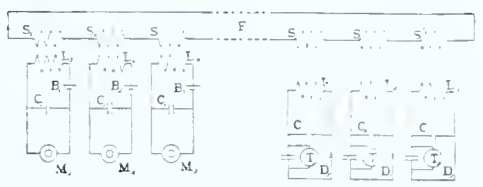


FIG. 4.—DETAILED VIEW.

There is no special generating apparatus provided for producing the high frequency currents in the arrangement in diagram Fig. 4, and by speaking in the microphone M, trains of damped vibrations are generated in the oscillatory circuit, having a frequency equal to the pitch of the voice, the capacity and induction being arranged as indicated at C D. In this case detectors D are connected in the three receiving circuits noted at the right in connection with the receivers T and capacity and inductance C and L.

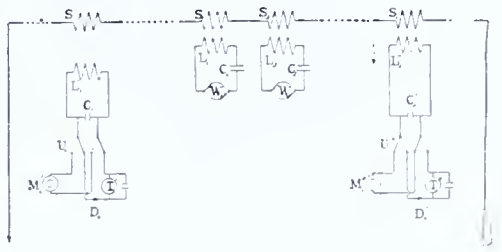


FIG. 5.—DETAILED VIEW.

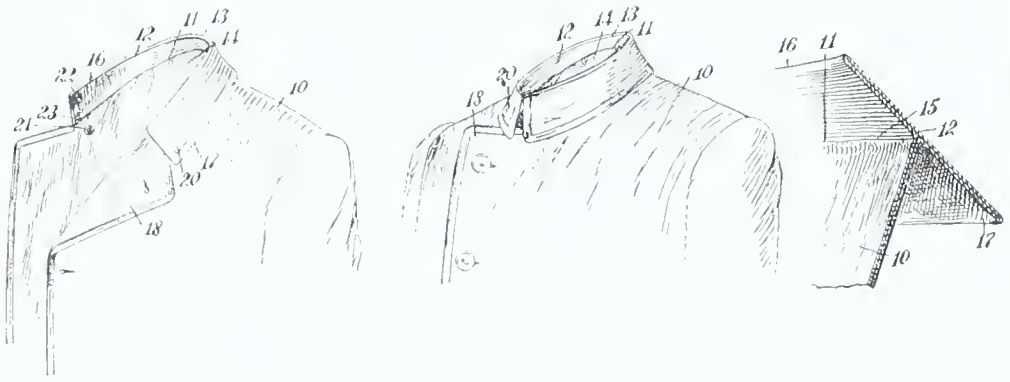
The same apparatus can be used alternately for receiving messages or transmitting them as desired, by means of the modification of this system of multiplex telephony noted in diagram Fig. 5. There is a commutator or switch arranged so that the same oscillatory circuit can be used for both purposes, the electrical connections being such as to make the transmission connections closer or stronger, and for reception looser or weaker between the inductance and line.

CLEVER NEW PATENTS.

GARMENT.—FRUIT TREE VENTILATOR.—DEVICE FOR CURING HAY IN THE FIELDS.—ANTISEPTIC SPOON.

Garment.

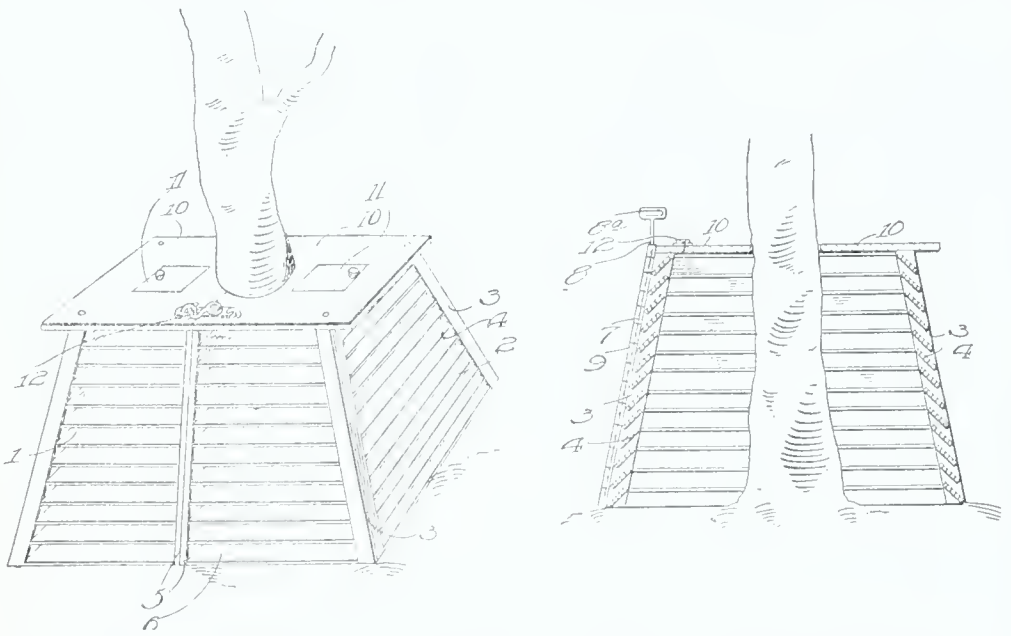
Physicians, drummers and other persons who are obliged to be outdoors a great deal of the time, especially when they are in country districts, find it desirable to wear in winter a garment that can be transformed at will from a rain coat to an ordinary overcoat. This can be accomplished by changing the position of the collar, and a new arrangement for this purpose has been recently patented by Mark Louis Kelley, of New York City. The collar of the coat he has designed can be worn in the usual fashion, with lapels, or can be made to button up well about the throat and thus afford greater protection to the wearer. As will be seen in the cuts, the collar is secured at the neck edge, along lines 15. At the front the lapels 18 are formed by folding the ma-



terial along the lines of fold 19, which merge into the neck edge. When it is desired to make a military garment of the coat, the lapels are folded outward as shown, the clasp fastened parts having been disengaged, and the collar ends assume the positions shown in center figure. They are provided with hooks and eyes so that they can be suitably fastened together to hold them in these positions. The back of the collar remains unchanged. the ends alone being adjustable. The outer lapel is preferably buttoned over. The device can be used on garments for both men and women; any material can be used and the garment be made single or double breasted. It will be seen that this invention obviates the necessity of making a plurality of thicknesses of the material at certain points, which is common in other types of convertible garments.

Fruit Tree Ventilator.

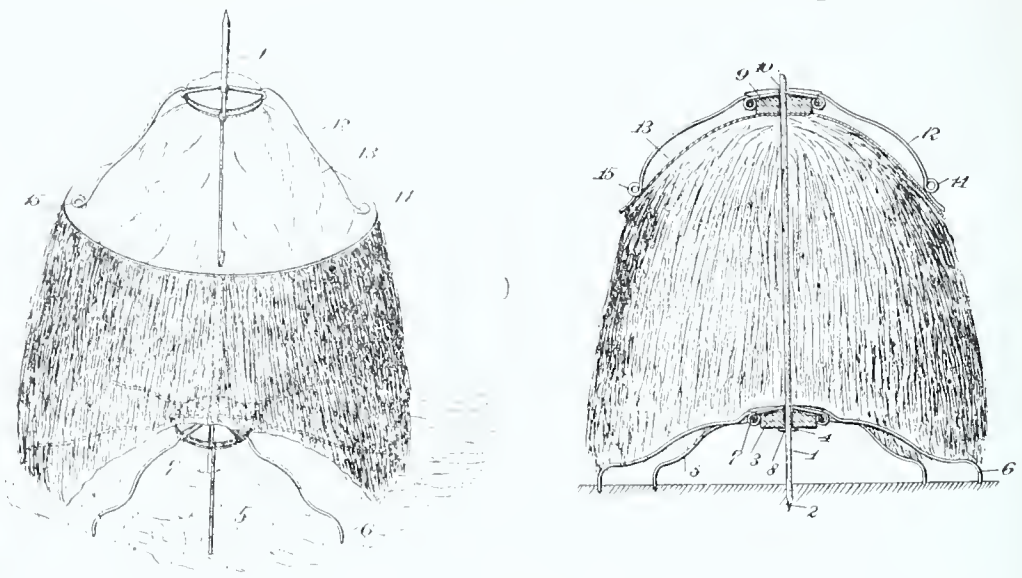
The unseasonably cold spells that sometimes come late in the spring and greatly injure the fruit industry, have led to the invention of a device to retard the rising of the sap and the blossoming of trees until the weather has settled. Stephen Dennis, of Jonesboro, Ark., has just patented the device, which consists of an arrangement for holding snow or other material closely around the base of the tree, thereby keeping it chilled. From the drawings, which show a perspective view and a vertical section of the ventilator, it will be seen that it consists of two sections hinged together and made of slats.



Each section has a pair of corner braces. The rear members 5 have a plurality of hinge sections 7, and a rod 8 extends through the barrel portions 9 thereof. It is clear that the sections may be spread apart when it is desired to detach the frame from the tree. The ice, snow, etc. may be inserted through the door 11 in the top, and the whole is held in place around the trunk by a hasp and hook. When crushed ice or snow is placed within the frame, it will be obvious that a free circulation of air may take place through the slats. This will be found an efficient device to prevent the premature blossoming of the tree, and the snow will be preserved a considerable length of time without renewal.

Device for Curing Hay in the Fields.

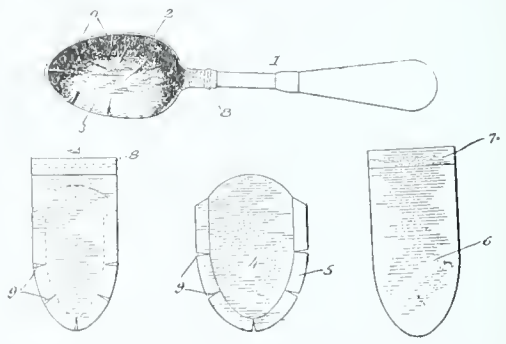
A simple and convenient device for supporting a stack of hay above the ground, thus facilitating its curing, has been patented by John Liesenfield, of Park Rapids, Minn. A rod pointed at one end and about six feet long is used, and this rod extends through an iron ring 3 (see cuts) and has wire legs 5, 6, bent around the ring portion 7 and having their outer ends bent to engage the ground. The ring is supported on the rod by a transverse pin 8. A second ring 9 has an opening to engage the upper end of the rod 2, and this ring has bent around it several steel wire rods, the inner ends of which bear against the rod 2 when the upper ring is in normal position, so that as the ring is pressed down along the rod and on top of the hay, the ring will be held in



position thereby. The wire rods are bent so that the upper portion of the hay cock is pointed, thereby enabling it to shed water easily. A canvas covering may be provided for the top of the stack. If desired the upper ring with the spring arms may be dispensed with, and a canvas cover used instead, being held in position by metal rings on its edges through which the rope runs, this being tied down to the legs. When it is wished to set up the device, the ground rod is forced about four inches into the earth, and the lower ring 3 slipped down to engage with the pin 8. The hay is then packed about it to the extent of 300 or 400 pounds, the canvas cover is placed in position and the top ring pushed down. When it is wished to tear down the haycock, the pin 8 is withdrawn, which allows the ground rod to be pulled up, the lower ring with the legs being left under the mass of hay until the latter is removed.

Antiseptic Spoon.

The demand for greater cleanliness in articles that are used by the public is being felt in many directions. In cafes, turkish baths, toilet rooms, at soda water fountains, etc., there is need for more thorough cleansing of the glasses, spoons, towels, etc., that are used in common, in order to prevent the spread of disease. Adrian Grassely, of New York, N. Y. has invented a means for making antiseptic the spoons that are employed in ice cream parlors and such places. It consists of the application to the bowl of the spoon of a cover of antiseptic fluid proof material, such as, for instance, paraffin paper. The drawings show a spoon with the cover applied, and also view of the top and bottom of cover. This has a flange on the bottom, adapted to be turned over and attached to its top portion, which has a transverse flange designed to be folded over a lead wire to secure the latter in position at the top of the cover. Both top and bottom portions are provided with V-shaped folds 9 along their outer edges, so as to give the cover a concavo-convex shape. In applying the cover to a spoon, the latter is inserted between the top and bottom portions so that the bottom 4



covers the convex side of the bowl of the spoon. The upper end of the cover is then folded downwardly around the stem of the spoon to hold the cover in place. The cover is used by only one person, and the covers are marketed in packages of such a nature as to keep them absolutely antiseptic.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

—o—

HENRY et al. v. A. B. DICK COMPANY.

(Supreme Court of the United States. March 11, 1912.)

1. PATENTS — SUIT FOR VIOLATION OF LICENSES — JURISDICTION OF FEDERAL COURT.

In determining whether a suit is one arising under the patent law and cognizable only in a court of the United States or one upon a contract between the patentee and his assignees or licensees and cognizable only in a State court unless there be diversity of citizenship the test of jurisdiction is: Does the complainant "set up some right, title or interest under the patent laws of the United States, or make it appear that some right or privilege will be defeated by one construction, or sustained by another, of those laws?"

2. SAME—RIGHTS THEREUNDER.

The property right in the materials composing a patented machine and the right to use for the purpose and in the manner pointed out by the patent are separable rights.

3. SAME—SAME.

The property right to a patented machine may pass to a purchaser with no right of use or with only the right of use in a specified way or at a specified place or for a specified purpose. The unlimited right or exclusive use which is possessed by and guaranteed to the patentee will be granted if the sale be unconditional; but if the right of use be confined by specific restrictions the use not permitted is necessarily reserved to the patentee.

4. SAME—SAME—LIMITATION THEREOF.

There are certain limitations upon the right of vending and using a patented machine. If the thing patented belongs to a class of things which on account of their inherent danger to the public safety or health cannot be sold or used because prohibited by an exertion of the police power of a State, they will not be immune to such law because patented.

5. SAME—VIOLATION OF AGREEMENTS—INFRINGEMENT.

Any reasonable stipulation not inherently violative of some substantive law imposed by a patentee as part of a sale of a patented machine is valid and enforcible. If the stipulation is one which qualifies the right of use in a machine sold subject thereto, so that a breach would give rise to a right of action upon the contract, it would at the same time be an act of infringement, giving to the patentee his choice of remedies.

6. SAME — CONTRIBUTORY INFRINGEMENT—DEFINITION.

"Contributory infringement," says Judge Townsend in Thomson-Houston Co. v Kelsey Co., (72 Fed. Rep., 1816,) "has been well defined as the intentional aiding of one person by another in the unlawful making, or selling or using of the patented invention.

7. SAME—SAME.

Where a patented machine was sold by complainant with a license agreement that it was to be used only with ink made by complainant, and defendant, with knowledge of such license agreement, sold to the owner of such machine ink not made by complainant, with the expectation that this ink was to be used in connection with such machine, Held that the acts of defendant constituted contributory infringement of complainant's patent.

LOONEN v. DEITSCH et al.

(Circuit Court, S. D. New York. May 2, 1911. 189 F. R. p. 487.)

1. TRADE-MARKS AND TRADE-NAMES-CHARACTER OF MARK—SUGGESTIVENESS.

Where a red cross, used as a trade-mark on toothbrushes prior to 1905, was only suggestive of asepsis and general cleanliness, and not descriptive of the general character of the brush, and was not intended to imply consent or approval of its use by the Red Cross Society, it was not objectionable as being either illegal or deceitful in itself.

2. TRADE-MARKS AND TRADE-NAMES—VALIDITY—BAD FAITH.

Where the complainant used a red cross as a trade-mark on toothbrushes, the fact that he added the words "Red Cross Brush" or "Red Cross" did not convict him of bad faith as indicating that the brushes had been adopted by or had anything to do with the Red Cross Society.

3. TRADE-MARKS AND TRADE-NAMES—EXTENT OF USE.

Plaintiff adopted a red cross as a trade-mark on toothbrushes with the words "Red Cross Brush." Before 1904 the only brushes bearing the mark had been a line of "Comilo" brushes. In 1904 complainant, finding the sales of the brushes to be falling off, began making and selling a bone brush to supply his trade in the United States, to which he added the red cross mark and the words "Red Cross Hygienic," which brushes he continued to ship in large quantities, and the "Comilo" in small quantities, until suit was brought, also shipping other brushes without the mark. Held, that the mark was not originally used to indicate "Comilo" brushes only, and complainant was not limited to its use on such brushes.

4. TRADE-MARKS AND TRADE-NAMES-CHARACTER OF MARK—QUALITY.

Evidence held insufficient to indicate that complainant adopted the red cross as a trade-mark for toothbrushes to indicate quality only.

5. TRADE-MARKS AND TRADE NAMES —NATURE OF MARK—PUBLIC POLICY.

Under Acts Cong. Jan. 5, 1905, c. 23, 33 Stat. 599 (U. S. Comp. St. Supp. 1909, p. 1038) and June 23, 1910, c 372, 36 Stat. 604, declaring that the use of the red cross as a trade-mark should be permitted where its use antedated 1905, it could not be said that the use of such trade-mark on toothbrushes antedating that date was contrary to public policy.

6. TRADE-MARKS AND TRADE-NAMES.

Where complainant a manufacturer of toothbrushes, used as trade-marks on the back a star-inclosed "L" and the word "Comilo," and thereafter placed on the front of the handle a red cross and the legend "Red Cross Brush," and the latter mark was shown to have been accepted by the public as indicating brushes made by complainant, it was no objection to complainant's use thereof that he had previously adopted and still used the marks on the back.

WOOD v. KAHN et al.

(Circuit Court, S. D. New York. July 3, 1911. 189 F. R. p. 399.)

PATENTS—INVENTION—PROCESS OF DIVIDING DIAMONDS.

The Wood patent, No. 839,356, for a process of dividing diamonds, consisting of dividing a larger diamond to form a plurality of smaller diamonds, by sawing into the larger diamond from opposite sides, the saw cuts meeting at an angle to form blocks from which smaller diamonds can be formed, the purpose being to save waste involved in the splitting method, does not disclose the invention or discovery of an art, and is void for lack of patentable invention.

HURD et al. v. SEIM et al.

(Circuit Court, N. D. New York. July 26, 1911. 189 F. R. p. 591.)

1. PATENTS—SUIT FOR INFRINGEMENT—INTERVENTION.

In an infringement suit against users or dealers in the alleged infringing article, there is no ground for permitting intervention by the company from which defendants bought such articles where the defense which it seeks to set up is equally open to the defendants: such company having the right to assume or assist the defendants in making such defense without becoming a party.

2. PATENTS—SUIT FOR INFRINGEMENT—CONSTUCTION OF DECREE.

In a decree entered by the Circuit Court of Appeals of the Second Circuit adjudging a patent valid and infringed, a provision excepting from the injunction restraining the defendant from selling infringing articles such articles as were made by a company in Indiana, where in a suit against such company the patent had been held invalid, was not adjudication of defendant's right to sell such articles in the Second Circuit, but merely reserved that question until it should arise in a proper case.

3. PATENTS — INFRINGEMENT — EFFECT OF PRIOR ADJUDICATION.

A patent was held valid and infringed by a Circuit Court in New York, and its decree was affirmed by the Circuit Court of Appeals of the Second Circuit and also by the Supreme Court. In a suit in Indiana against a manufacturer the patent had been held invalid, and the decree was not appealed from. Held, that such decree did not authorize the sale or use in New York or elsewhere in the Second Circuit of articles thereafter made by the defendant in that suit, which were clear infringements of the patent.

4. PATENTS — SUIT FOR INFRINGEMENT — PARTIES AND PRIVIES—"PRIVITY."

The term "privity" denotes mutual or successive relationship to the same rights of property, and purchasers of articles made by defendant in a suit for infringement of a patent after the decree therein are not privies to such decree, nor protected thereby as such.

AMERICAN STEEL FOUNDRIES et al. v. WOLFF TRUCK FRAME CO.

(Circuit Court, N. D. Illinois, N. D. April 25, 1911. 189 F. R. p. 601.)

1. PATENTS—AMENDMENT OF APPLICATION—VERIFICATION.

An amendment to an application for patent merely adding new claims which do not involve a departure from the original invention as described and shown in the specification and drawings is within the applicant's right and need not be verified.

2. PATENTS — SPECIFICATION — EFFECT OF REFERENCE TO DRAWINGS.

Where an opening in a mechanical device, as shown in the drawings filed as part of an application for a patent, was of peculiar form, and such opening was described in the specification by reference to the drawings and the letter by which it was designated thereon, the peculiar form was thereby incorporated in the specification although not otherwise mentioned therein.

3. PATENTS—VALIDITY AND INFRINGEMENT-CAR TRUCK.

The Hardie patent, No. 569,044, for a metallic car truck, construed and held to disclose patentable novelty and invention. Also held infringed by a modified form of the device of the Harrington patent, No. 857,937.

ASBESTOS SHINGLE, SLATE & SHEATHING CO. et al. v. H. W. JOHNS-MANVILLE CO.

(Circuit Court, S. D. New York. January 30, 1911. 189 F. R. p. 608.)

1. PATENTS — VALIDITY— PROCESS OF MAKING ARTIFICIAL STONE PLATES.

The Hatschek reissue patent, No. 12,594 (original No. 769,978) for a process of making artificial stone plates and the product of such process, claim 6, which is for a product not stated to be produced by such process, and which must be presumed not to be since such product is expressly covered by claim 7, is void because it does not show the method of making the product, and also because a claim for the same thing in the original application was rejected with the patentee's assent. Claim 1, which is for a process of making hydraulic cement colloidal, is also void for lack of novelty.

2. WORDS AND PHRASES—"GROUT."

"Grout" is a thin watery concrete in which the proportion or bulk of water is large.

PERKINS ELECTRIC SWITCH MFG. CO. v. YOST ELECTRIC MFG. CO.

(Circuit Court, N. D. Ohio, W. D. Nov. 1, 1911. 189 F. R. p. 625.)

1. PATENTS—SUIT FOR INFRINGEMENT—ACCOUNTING FOR PROFITS AND DAMAGES.

Where the controversy between the parties to an infringement suit over a certain device, of which defendant had made only a small number and had discontinued before suit brought, involves no substantial amount in the way of damages or profits, an accounting will not be directed although infringement is found.

2. PATENTS—SUIT FOR INFRINGEMENT—DIVISION OF COSTS.

Where a complaint alleged infringement by a number of devices made by defendant, but succeeded as to one only, a division of the costs of the trial court will not be made proportionate to the final result.

PEIRCE SPECIALTY CO. et al. v. HARVARD ELECTRIC CO.

(Circuit Court, N. D. Illinois, E. D. Aug. 4, 1911. 189 F. R. p. 628.)

PATENTS—INFRINGEMENT—INSULATOR.

The Peirce patent, No. 856,801, for improvements in insulators, consisting of a bracket formed of a metal bar having a slot at the top for the attachment of a sheet metal cone, threaded to receive and hold the insulator, the purpose being to provide an elastic seat for the insulator, held infringed by a device differing only in the means of attachment of the cone to the bracket, which difference is merely colorable.

ELECTRIC SMELTING & ALUMINUM CO. v. CARBORUNDUM CO.

(Circuit Court, W. D. Pennsylvania. Nov. 24, 1911. 189 F. R. p. 710.)

1. PATENTS—SUIT FOR INFRINGEMENT—INJUNCTION.

In a suit for infringement of a patent, although infringement is found and an accounting ordered, the court has power to refuse an injunction if the facts are such that it would be inequitable to grant it.

2. PATENTS—SUIT FOR INFRINGEMENT—INJUNCTION—DISCRETION OF COURT.

Defendants were the sole manufacturers of carborundum, having built up an extensive business, and having a large and expensive plant with machinery built for that special work. Their product was also protected by a patent, but in its manufacture they used a process of smelting by electric current which was held to infringe complainant's patent, and without the use of such process their plant could not be operated. Their use of it was entered into in good faith, and without knowledge that it was an infringement Held that, while complainant was entitled to a decree for an injunction and an accounting, inasmuch as it was not in competition with defendant as a manufacturer and could be fully compensated in damages, the injunction would be withheld on the giving of a bond by defendant to secure the payment of such profits and damages as complainant might recover.

NATIONAL ELECTRIC SIGNALING CO. v. UNITED WIRELESS TELEGRAPH CO.

(Circuit Court, D. Maine. September 21, 1911. 189 F. R. p. 727.)

1. PATENTS—VALIDITY AND INFRINGEMENT—WIRELESS TELEGRAPH SYSTEM.

The Fessenden patent, No. 706,936, for a system of transmission of energy by electromagnetic waves, with a closed circuit tuned to the frequency of the transmitted impulses and a current-operated wave-responsive device, discloses patentable invention in view of the prior state of the art of wireless telegraphy, and is not anticipated by the device employing a coherer or circuit closer with a system of tuning, the object of which was to secure precision between the transmitter and a single receiver, and to enable the operator to adjust the transmitter to receivers at different stations, nor by certain publications; also, held infringed, as to claims 6, 9-12, 14, 19-21, 27-30, 32, 33, and 35.

2. PATENTS—ANTICIPATION—PUBLICATION-SUFFICIENCY.

For a publication to coustitute an anticipation of a patent, it must describe the invention in such full, clear, and intelligent terms as to enable persons skilled in the art to reproduce the process or article without assistance from the patent.

ELECTRIC RENOVATOR MFG. CO. v. VACUUM CLEANER CO. et al.

(Circuit Court, W. D. Pennsylvania. Aug. 5, 1911. 189 F. R. p. 756.)

INJUNCTION—GROUNDS — UNFAIR COMPETITION IN BUSINESS—THREATENING SUITS.

A defendant, who, after claiming that complainant was manufacturing articles infringing its patent, and being requested to bring suit to determine the question, instead of doing so, persistently and for nearly two years continued to send threatening letters and circulars to complainant's customers and persons who might become customers, but without bringing suit against any, is chargeable with bad faith and unfair business methods, which entitle complainant to an injunction.

BYERLEY etal. v. STANDARD ASPHALT & RUBBER CO.

(Circuit Court, D. New Jersey. June 7, 1911. 189 F. R. p. 759.)

1. PATENTS — SUIT FOR INFRINGEMENT—PRELIMINARY INJUNCTION.

A court will not ordinarily on a motion for a preliminary injunction to restrain infringement of a patent determine the scope and validity of a subsequent patent under which defendant is operating, the presumption, being, until overcome by proof, that it substantially differs from the earlier patent, and that defendant is acting within his rights.

2. PATENTS — SUIT FOR — INFRINGEMENT—PRELIMINARY INJUNCTION.

A preliminary injunction to restrain infringement of a patent denied where defendant had for 15 years been engaged in manufacturing the alleged infringing product under later product and process patents, and had an extensive business with large investment and outstanding contracts, and where the question of infringement was doubtful on the showing made.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

James F. Andrews, Rosalia, Washington. Gopher Trap. — An animal known as the pocket gopher does a great deal of damage in the west. Its habit is to mine runways under the ground, and make its home in the same. In constructing the underground passages, the gopher makes a main passage and short side channels, the ends of which open out at the surface of the ground, and through these outlet openings the soil is discharged, forming mounds. It is the desire of the gopher to live in darkness, and whenever he discovers a light in his underground passage, he immediately proceeds to close the same by collecting the earth and pushing it along before him. The invention of this patentee was constructed with full knowledge of the habits of the gopher, and forms a trap which, it is believed, will answer the purpose in every respect. The invention consists of an open-ended main tube having inwardly converging points or spikes, a branch tube extending from the main tube at an intermediate point and communicating therewith, and means for partially closing the outer end of the branch tube so that light may be admitted to the main tube through the branch tube and yet form a barrier for the animal, said means consisting of a sleeve fitted on the branch tube and provided with a screen.

Charles M. Green, deceased, Grand Forks, N. Dakota, inventor; Ado D. Skinner, assignee, same place. Grain Fork. — This invention provides a simple and useful tool adapted to be employed in shocking bundles of grain. It is the custom when bundles of grain are dropped by a harvesting machine, for the farmer to follow along and pick up by hand the bundles of grain and carry them to different portions of the field so as to put them in shocks. In order to avoid the necessity of stooping over and lifting each bundle and then carrying the same to the shocks, the inventor has provided a fork which will materially assist this work. The implement is adapted to be carried in the hand and is provided with suitable means for tightly gripping the bundle and carrying the same to the place desired. It consists essentially of a pair of crossed pivoted members, each member having an inwardly curved fork end, the fork of one member being wider than the fork of the other member, and a spring connected to each of the members for holding the forks in a normally open position, one of the members being provided with a handle and the other member having a finger piece which is spaced from the handle in such relation thereto that one hand can grasp both the handle and the finger piece and operate the members.

Horace F. Neumeyer, Macungie, Pa. Two patents. Wilson K. Mohr, Allentown, Pa., assignee of the first patent.—The first patent covers a chuck designed for holding articles in a lathe during the finishing thereof, and is in the nature of an attachment for hollow spindle lathes. It includes improved work gripping means, together with a device for closing the chuck on the work and clutching the same to the live spindle of the lathe, in combination with a brake device for positively arresting the rotation of the chuck when the work is finished and is to be taken out, so that the dressing or finishing of small articles can be accomplished with great facility and saving of time.

The second patent relates to a faucet, adapted for use as a beer cock, and capable also of being employed for water and other high pressures. It is the aim of this invention to provide a sanitary faucet, adapted to be easily taken apart and readily put together without the use of a wrench, and capable also of being readily re-washered and of affording a guide to enable a washer to be cut the proper size. The faucet comprises in its construction a barrel or body, a spout sleeve slidable on the same and having a cam slot, and an outer rotary sleeve held against movement longitudinally of the barrel or body and having a handle for operating it and provided with a lug arranged to run in the slot of the slidable spout sleeve for actuating the latter.

Nicholas C. Miller, Dodgeville, Wisc. Five patents.—The first patent relates to an apparatus adapted to distribute hay to either one or two mows of a barn or other shelter. It includes a distributing carriage movable along a track between the mows, and equipped with a tiltable platform having a shifting weight for holding the platform inclined so as to discharge the hay, straw and other material at either side of the track.

The second patent also covers an apparatus designed for distributing hay within barns or other buildings, and adapted to permit the building up of hay mows to any desired height. In the present invention, the distributer is pendantly mounted upon tracks, which in turn are hung from the rafters of the building in which the device is installed, and provision is made for elevating and lowering the support for the distributer and for constraining the distributer towards one end of the building so that it may be readily tilted to one side or the other as needed by the man on the load of hay, the action of the constraining means being to move the distributer in such relation to the load of hay that the manipulating ropes usually provided are readily grasped by the operator without leaving his position on the load.

It is the aim of the invention of the third patent to provide an apparatus designed particularly for unloading hay in barns, sheds, or other enclosures, and adapted to dispense with the use of horses and the extra man usually employed to drive the same and carry back the rope and doubletree, and capable of relieving the operator of all weight and of effecting a great saving in both time and labor. This apparatus, which is adapted to be readily applied to a barn or shed, is provided with an exteriorly arranged motor-actuated hoisting apparatus, adapted to be controlled by a person within the barn or shed and on the load of hay.

It is the object of the fourth patent to provide a clutch, designed particularly for use in connection with the unloading apparatus embraced in the third patent. The clutch is adapted to be operated at a distance from it for controlling the rotation of a hoisting drum, which is actuated by a continuously operating motor. The clutch includes clutch levers reversible to engage either the inner or outer face of the drum, a shifting lever connected with the clutch levers, a spring for urging the levers in one direction, a rope connected with the shifting lever for moving the same in the opposite direction, and spaced guiding means for the rope located at opposite sides of the shifting lever to enable the latter to be moved in either direction by a pull on the shifting rope.

The fifth patent relates to a drum designed for use in connection with the clutch of the fourth patent and the unloading apparatus of the third patent. The drum is equipped with guards or fingers for keeping the hoisting rope from the heads of the drum, and is provided with means adapted to prevent the drum, when released from the actuating mechanism by the said clutch, from rotating rapidly and unwinding excessive slack.

John Mosiman, Sedalia, Missouri. Scaffold Jack. — This invention has special reference to a jack to be used as a support for scaffolding. One object of the invention is to provide a jack which may be set up close to a wall and readily adjusted to support a scaffold at any desired height, and which will be provided with a simple and efficient means for preventing the drop of the scaffold when the jack has been adjusted to that height. A further object is to provide a construction which will permit the several parts to be arranged in a small compass when the jack is to be shipped from the factory, and to be as readily assembled when it is set up for use. It consists of a slotted standard, a lifting bar mounted therein, a pair of supporting plates secured in the slotted standard and projecting forwardly therefrom and having a series of notches along their front edges, an open step carried by the lifting bar, and a holding pin adapted to be inserted through the said step to engage the notches in the supporting plates and thereby lock the lifting bar and step at any desired height.

George D. Bacon, Fulton, Cal. Logging Jack.—The invention relates to a jack especially adapted for lifting logs and other heavy objects, and it has for its object to provide a jack of this character which is of durable construction, capable of exerting great power, and which may be readily manipulated. It consists of the provision of relatively movable rack bars on which is mounted a carriage or frame carrying a pinion for moving the rack bars, together with operating mechanism for the pinion, there being anti-friction devices between the relatively movable parts to insure easy working. The pinion is operated by a crank shaft having an operating crank on the end of the shaft, a locking device being provided to prevent the reverse rotation of the shaft.

Wm. Benson, Breckenridge, Mich. Gearing for Traction Engines.—The invention relates particularly to the gearing for driving, stopping and reversing the engine, and the object is to provide mechanism for this purpose which will furnish a toothed driving gear for movement in a forward direction, a frictional driving gear for transmitting the movement of the engine to reverse the movement of the truck, means for frictionally connecting the driving shaft of the engine with either the direct or reverse gear, and means whereby the engine itself may act as a brake when the truck is moving faster than the engine, as, for instance, when running down hill. The mechanism is so constructed as to permit the engine to be stopped or reversed with celerity, and the gearing is simplified so that the operations of starting, stopping, or reversing the truck may be accomplished by the actuation of one lever and without any danger of stripping the gears used for the direct drive.

Rosseau H. Atkison, Goldengate, Illinois, inventor; Peter C. Borah, assignee. Corn Husker.—The object of this invention is the provision of a device of a simple character which may be worn with great facility on either hand, and which shall be comfortable to the user and capable of removing the ears of corn easily and rapidly in whatever position they may be growing. The invention consist of a symmetrical metallic plate having a dished portion shaped to conform to the hand, and provided at one edge at its opposite sides with hooks adapted to engage the sides of the hand, and having a series of V-shaped hooks struck up from the main portion, one of said hooks projecting upwardly and the other hooks being disposed on opposite sides of said upwardly projecting hook and projecting downwardly.

Raymond G. Sheller, Grundy Center, Iowa. Gambrel.—This is a device for supporting carcasses while the same are being dressed or cut, and is particularly designed for use in slaughter houses. It comprises a pair of hook arms which are pivotally connected at their upper ends and provided at their lower ends with upstanding hooks, and on their under sides with perforated lugs below the plane of said hooks, and a pair of brace arms pivotally attached at their outer ends to the said lugs and pivotally connected at their inner ends to each other by a joint which allows free movement of the arms upwardly, but limits their downward movement to a horizontal position in alinement with each other.

Rudolph C. Hoyer, Montgomery, Ala. Envelope Seal.—This invention relates to a seal for envelopes and other containers, and has for its object to provide a simple device which can be readily manufactured, easily applied to an envelope, and when applied will constitute an effective seal for the same, preventing the contents thereof from being tampered with or abstracted without detection. The device is so constructed that it may be applied to any form of envelope now in general use without any alteration whatsoever. It consists of a U-shaped metallic seal having inwardly extending teeth, said seal being adapted to straddle the wall of the envelope, the top or free flap being passed over and beyond the said seal and the point thereof folded inwardly under and engaged with the teeth of the seal, so as to be simultaneously clamped and retained with the other flaps upon the compression of said seal.

William H. Depp, Brookville, Pa. Photograph Developing Rack.—This invention relates to a rack for supporting photographic films in the process of developing, the object being to provide a rack which is adapted to receive films of various lengths, to hold the same stretched and to permit the films to be held in this manner within a bath of developing material. The construction is such that the film is very easily clamped at both ends, one of the clamps being adjustable quickly and yet positively, so that a film may be easily inserted, stretched and eventually taken out. The invention consists of a rack formed with a base, said base being provided at one end with a fixed clamping post and at the other end provided with a sliding clamping post, and a clamp adapted to fasten the posts at any particular position desired on the rack. In actual practice a plurality of these racks are intended to be mounted side by side upon transverse supporting bars.

NEW PATENTS FOR SALE.

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FOR SALE—Canadian patent on Automatic Copy Holder for type writing machines. For detailed description see Inventive Age of May 1911. Cole & Fortney, Kingwood, W. Va. jun

FOR SALE—Patent No. 1,014,117. Either outright or on a royalty basis. A good safety automatic railway crossing alarm, operated by rolling stock. Address, A. T. Cabeen, R. No. 1, Stuttgart, Ark. jun

FOR SALE or lease—My patents Nos. 1,007,964, 1,007,965, covering a new line of wringers. Better working than any on the market, and giving entire satisfaction. Address, G. A. Paddock, Beaver Dam, Wisconsin. jun

FOR SALE—Patent No. 1,00,092, dated Oct. 31, 1911. Syrup cooler for evaporating pans. Greatest value for making syrup. It saves the labor of one hand. Saves syrup and fuel. Address, O. G. Dasher, R. R. No. 1, Marlow, Georgia. jun

FOR SALE outright—Improved massaging implement. Something entirely new. Only implement that restores health to scalp and stops hair from falling out. Fills long felt want of the public. Will sell for cash to highest bidder. Address, P. O. Box 355, Wilber, Nebr. jun

FOR SALE outright or on royalty—U. S. and Canadian patents Nos. 966,327 and 132,135, respectively, for pole and shaft attachment for running gears of vehicles; or financial help wanted to incorporate a company to manufacture the attachment. Device can be put on any wagon. Have built wagons with this attachment with good profit already. Have a well equipped shop, and have had 25 years experience. For further details communicate with Robert Grube, R.F.D. No. 1, Egg Harbor City, N. J. jun

FOR SALE—Patent No. 997,082, dated July 4, 1911. Automatic Pocket Fan. Would sell outright or place it on royalty or with a manufacturing firm to manufacture it for me. For particulars address, C. F. Oesterreicher, Palm Valley, Florida. my

FOR SALE—Patent No. 1,010,346. Coin Holder. Outright or on royalty. Especially adapted for office and bank usages. If interested apply to Mabel Burn, Beaufort, S. C. my

FOR SALE—Patent on one of the best and lightest machines made for smoothing and grading roads. All dead weight carried on three wheels. Can be operated by one man with three horses. For further particulars apply to W. H. Wilson, Route No. 4. Marceline, Mo. my

FOR SALE—One person vacuum cleaner on new principle. Traction operative means. Pushed about the room like carpet sweeper. Developes great suction. Runs easily. Simple in construction. No levers to work. No electricity. Does thorough work. Address, L. Van Nette, Bradford, Pa. my

FOR SALE—U. S. Patent No. 1,015,137, dated Jan. 16, 1912. Safety Elevator Device. Would consider bids either outright or on royalty. This is very simple in construction. Is not destructive to guides. Works automatically in case of broken cable. Releases automatically when connected to cable and lifted. Is applicable to any shape guide. Address, R. D. Clark, 219 Peter St., Duquesne, Pa. my

FOR SALE—Patent No. 1,003,801. Cot Tent. Outright or royalty. This invention will appeal to the army, militia, sportsmen, campers, healthseekers, etc. Address, E. C. Rodwick, Ukiah, Cal. apr

FOR SALE—Patent No. 1,006,319 Rail Tie and Fastening. Very simple and effective. Address, Albert Valkelberg, Box 7, R. R. No. 1, Hiteman, Iowa. apr

FOR SALE outright or state rights—Patent No. 964,823, dated July 19, 1910. One horse hay press. Powerful and rapid. Simple construction and good profit. Address, patentee and owner. W. R. Taylor, Winnsboro, La. apr

FOR SALE—Patent No. 997,661. Pneumatic Water Elevator. A complete water works system for country or city homes. Will save its price by reducing fire insurance, besides convenience for house and barn. Address, V. L. Ellison, No. 1000 Whitaker St. Shawnee, Okla. apr

FOR SALE—Patent No. 1,006,695. Railroad Tie with detachable cusbion. Simple, and easy to construct. Durable as steel. For drawings and further particulars address, C. W. Smith, North Baltimore, Ohio, my

FOR SALE—Patent No. 1,008,257. Water Motor. Will sell for cash or two payments. Write for description of motor. Jose Gonzalez, No. 15 Water St. Laredo, Texas. my

FOR SALE—Patent No. 1,006,507, dated Oct. 24, 1911. Expansion Joint. Expands freely under high pressure with unlimited traverse. Been in practical use since September 1910. Address, C. R. Speight, Burgaw, N. C. mar-13

FOR SALE outright—U. S. Patent No. 1,009,374, dated Oct. 31, 1911. Carbide gas strainer for all acetylene lights, especially for automobiles. Will sell to the highest bidder. Address, Anton H. Mollman, No. 698 Park St., Hillsboro, Ill. my

FOR SALE—Patent pen holder whereby the old pen may be removed and holder put in place for new pen without soiling the fingers. This is a novelty as well as a useful article and will be a money maker. Address, W. J. Eicher, Box 66, Brownsville, Pa. my

FOR SALE—Patent No. 995,784. A folding device to wear on shoes to prevent slipping on slippery walks or ice. Wish to correspond with prospective buyers. Address, James E. Gerry, 1511 Larrabee Ave., South Bellingham, Wash. my

FOR SALE—Patent No. 1,004,475. Car Step. An extensible step for railroad cars. Fills a long felt want. Address, Mrs. Anna A. Schrader, Mt. Olive, Illinois. apr

FOR SALE—Patent No. 1,004,775. Foot-rest for registers and radiators. Cash or royalty. Address, Margaret B. Goodwin, 210 East 4th Ave., Denver, Colorado. apr

FOR SALE—Patent No. 984,903. Gas Hose Clamp and Holder. Prevents the hose from coming loose, leaking and breaking. Sample ten cents. Address, A. and G. Gradel, 818 John St., West Hoboken, N. J. apr

FOR SALE — U. S. Patent No. 1,006,265. Automobile Sleighing Attachment. Will sell outright or on royalty. If interested address, Martin Olson, Carlin Bay, Idaho. apr

FOR SALE — Patent No. 1,005,567. Bed Bug Trap. Something entirely new. Will trap them all. Bugs cannot possibly reach the bed if simple instructions are followed. No liquid, no poison. Will let go to best proposition. Address, W. H. McDonald, Pima, Arizona. apr

FOR SALE—U. S. Patent No. 1,010,915, dated December 5, 1911. Wire Clamping Stretcher. Would consider bids either outright or on royalty. Address, R. G. Jaggers, Sonora, Kentucky. apr

FOR SALE—Patent No. 1,002,164. Portable Power Cut-off Saw. For felling trees and sawing the trunks into blocks. Price, low. Property in exchange and royalties considered. Address, W. C. Lipscomb, Crockett, Texas. apr

WANTED.

WANTED a Company to manufacture and market my improved patent insulator Patent No. 1,009,810, for telegraph and telephone lines. Sale of insulators unlimited. Foreign patents applied for. Address, T. H. Watkins, Wakpala, South Dakota. my

WANTED—A company to manufacture my suspended tramway, patent No. 992,672, on royalty basis. Indispensable in mercantile establishments for conveying goods. Saves labor, reduces expense, increases speed, and prevents breakage. Address, Patrick Killpatrick, Huron, S. D. my

WANTED—A company to manufacture my massage instrument on royalty. Body part which holds tonics, plated silver, with perforated lid, over which is a lid of studded rubber, also perforated. Handle of wood. Only instrument that applies tonics and does the massaging. Patent No. 1,007,879, granted Nov. 7, 1911. Address, Daisy Lee, 1240 Emerald Ave., Chicago Heights, Ill. apr

WANTED—To correspond with manufacturers regarding the manufacture and placing on the market of a meritorious and useful celluloid article having practically an unlimited field for its operation. Address, P. O. Box 355, Wilber, Nebr. apr

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WASHINGTON, D. C., APRIL 1, 1912.

A REVOLUTIONARY DECISION.

We have frequently commented upon the fact that the courts of this country have so construed the patent laws as to make the right of the patentee an absolute one, and we have contrasted the conditions prevailing here with that in England, in which country a patentee is prohibited from making license restrictions as to the way the articles when sold may be used.

We have noted in the past the decisions of certain Circuit Courts of Appeal holding parties for contributory infringement in various cases, and we have expressed our opinion adversely to such decisions, and have regretted that such precedents were being created, for we have felt that in the end they would hurt the patent system rather than aid it. In our issue of June 1911 we discussed the question with relation to the bills designed to remedy the matter then pending before Congress. It remained, however, for the Supreme Court of the United States in its recent decision to bring to a focus the attention of the country on this subject, and as a result steps are now being taken to correct the evil that admittedly exists. The syllabus of the decision is printed on page five of this issue. A complete copy of the decision can be obtained from the Patent Office by ordering a copy of the Official Gazette dated March 19, 1912.

The particular case referred to was a suit by the A. B. Dick Company against Sidney Henry, charging him with contributory infringement for selling supplies to Christine B. Sqou of New York to be used on a rotary mimeograph, patented by the Dick Company. On each mimeograph sold, a notice is printed setting forth that it is sold with the restriction that it is to be used only with ink made by the Company. The practice of making sales of patented articles with restrictions of this character has become a fixed one, due largely, of course, to the fact that such restrictions have, in the past, been sustained by the courts as within the patent monopoly.

For instance, there are certain safety razors on the market which, under a notice printed on the box containing the razors, are required to be sold at a certain figure, e. g., five dollars. Such razors cost less than a dollar to make, and the retailer gets them for about three dollars. Yet, he is required by the manufacturer to sell them at five dollars, under penalty of being charged as an infringer of the patent. Moreover, when the customer gets the razor, he dare not re-sell it for less than the regular price, five dollars, or he himself may he charged with infringement. Indeed, if he attempts to re-sharpen the blades, which go with the razor, he subjects himself to the charge of infringement.

These restrictions on the sales of patented articles serve to give a monopoly in the sale of things which are not a part of the patent. In the case of the mimeograph, the purchaser of the machine is required to buy all supplies, including the ink, from the manufacturer under penalty of being charged with infringement.

In the case before the Supreme Court, Chief Justice White and Justices Hughes and Lamar dissented. As is well known, the Supreme Court has one vacancy, and Justice Day did not sit in the case. The decision was four in favor of the patentee's contention and three against. In other words, a minority of the Court decided the case. Because of this fact, Attorney General Wickersham is planning to move for a rehearing before the full bench, believing that upon further argument, the Justice who did not sit, in addition to the new Justice just appointed, may turn the scales the other way. There is much merit in this belief, and it is generally thought that the Court would favorably entertain a motion for rehearing.

The Chief Justice, commenting on the case, stated that if there had been a provision in the patent giving a monopoly in ink, the court would have been compelled to hold the patent not good; yet he said the patentee was given by the decision a monopoly in ink, "a monopoly which could not have existed under the patent laws." A patentee of a printing press could attach to the sale of the press a condition that all paper used on the press should be purchased from the manufacturer of the machine. A patentee of a sewing machine could make as a condition to the sale of the machine, a provision that no thread or needle should be used on the sewing machine except what was purchased from the manufacturer. In this way the purchaser of the machine would have to pay tribute to the manufacturer as long as the machine was in use or the patent in force. In emphasizing the extent to which the decision would reach, and how far restrictions are placed on the sale of patented articles, Chief Justice White told of an instance in his own experience in the purchase of a razor. "When I got home I found that I had become an infringer of a patent because I had paid for the razor the price I had been asked and nothing more."

This peculiar condition has, as stated, existed in various sections of the country for a long time, due to certain decisions of the lower courts, but it required this decision of the Supreme Court to centralize the attention of the entire country on the subject.

In addition to the steps being taken to have the Supreme Court rehear the case, Congress is moving to remedy the situation. Representative Littleton, of New York, is preparing a bill to meet the situation. It is intended to revise that portion of the existing statute which under the court's decision permits patentees to designate what accessories to their patents can be used in connection with the original machine or implement.

Representative Norris of Nebraska, in discussing the matter, expressed the view that some legislation to "overcome legalized monopoly" would be forthcoming before Congress adjourned. The time is a propitious one, not only to remedy the evil that exists, but to correct other defects in the patent law, and it is hoped it will be taken advantage of.

It has been suggested that there should be no monopoly rights granted under a patent; that a patentee should be shorn of all such rights, and given instead a royalty right in his invention, so that anybody so wishing would be permitted to manufacture a patented article under license from the patent authorities of the Government, this license to determine what royalty should be paid to the owner of the patented invention. In this way, monopoly under the patent would be impossible, and the many evil practices arising under the present law would be ended. It is a notorious fact that many valuable inventions are suppressed because to utilize them would make commercial investments in existing plants useless. It has been charged that this is particularly true in the field of telephony, shoe machinery, etc. A revolutionary device is patented, and thereupon some interest which would sustain a loss if the device were placed on the market, promptly buys up the patent and then declines to make and market the improved article. The patent thus becomes a means of suppressing and discouraging invention and of forcing archaic devices on a public which is entitled to the best and most modern.

The decision forces an issue and points to the importance of thorough study as to the necessary reform of the whole patent system. If it produces this result it will be a blessing in disguise.

HOW SHALL THE INVENTOR BE PROTECTED?

We are constantly in receipt of letters urging that the Government should do something to protect the inventor. That there is a well grounded belief that the present laws are inadequate in this respect is proven by the number of instances which can be cited showing how the law has worked hardship.

Speaking to the American Institute of Architects, its president declared that the patent laws of te country discriminated woefully against the poor man. Unless one has money, and plenty of it, he might, according to the speaker, better forget his invention before he makes it, for "before him stretches the labyrinth of the Patent Office, through whose technical pitfalls no man can pass without a golden key."

However, this is not the advice that the inventor usually gets from a certain class of patent attorneys, who make it a business, through their "Lists of inventions wanted," and other alluring literature, to encourage the notion that one has only to obtain a patent to make a fortune. No wonder, then, that the average inventor, the man who has taken out his first patent, believes that the notice from the Government of the issuance of his patent is the passport to wealth and position. One has only to read the letters from inventors appraising their inventions to see how firmly this idea has become ingrafted in the mind of the average man.

Here is a man with a gate! The patent on it embraces some small detail, and it is differentiated from other gates only in a small improvement. It may have cost the inventor less than a hundred dollars to obtain the patent, and involved little sacrifice of his time to make the invention. Yet, because of the Government seal and certificate, the improvement, which, if not patented would probably have failed to attract any attention, has suddenly become possessed of untold value in the mind of the patentee, and he is found rating its commercial value at anywhere from ten thousand to twenty-five thousand dollars.

We should not blame the inventor, however, when patent attorneys of low moral standard circulate in their literature and advertise to the world in black faced type, statements such as "Fortunes in patents," "Patent your ideas. They may bring you wealth." "One million dollars offered for one invention. One hundred thousand for another." These and other catch phrases serve their purpose of stimulating invention where no stimulation is necessary, causing inventors to apply for patents on things that possess no commercial value.

A writer on the subject contends that the inventor should be protected

against himself. Quoting from the article:—

"But an even greater reform would be some method whereby the hopes of the visionaries would not be raised by the jest of Government protection against the use of something which no one needs, and for which the world is full of substitutes. The patent records are full of examples of inventions born to blush unseen. Every one means some hope blasted, perhaps some tragedy of misdirected ambition. Every one means the waste of dollars, in the majority of instances torn from scanty and pitiful hoards. So far from there being too great difficulty in obtaining a patent, it has proved in a great many instances that the ease of securing one is the rock upon which many a life, that would be otherwise useful, goes hopelessly to wreck."

There is a good deal of truth in this. Every practitioner before the Patent Office has come in contact with inventors who insist upon securing a patent, even though the inventions are of no practical or commercial value, and also inventors who insist upon applying for patents even though their inventions are substantially anticipated.

Then there is the attorney who refuses, or fails, to disclose to his client, before the filing of the application, the patents resembling the invention of the client, and which, if shown to him, would have probably deterred the inventor from making the application. Such conduct on the part of the attorney is a clear breach of trust, if it cannot be characterized by the harsher term of petty larceny.

There is no doubt that a stricter interpretation or administration of the patent laws would, while it might lessen the number of patents granted, do a great deal of good in the end.

Some one has suggested that the Government should protect the inventor by issuing patents which will not infringe on the basic ideas of other patents. In other words, that the Patent Office when it issues a patent will give to the patentee what might be called a clean bill of health. As it is now, there are patents issued every week which are infringements of prior patents. The Patent Office in issuing a patent does not determine the question of infringement. It simply says to the patentee, you have made an invention that is worthy of patent protection and you are entitled to monopolize that invention by making, using and selling the same for a period of seventeen years. Naturally the inference is that the Government would not grant the patentee the right to make, use and sell the invention to the exclusion of every one else, if the patentee were infringing on a prior patent, but as every one knows who is conversant with patent practice, the Patent Office does not consider the *claims* of prior patents in issuing a patent to a later inventor.

In order to determine the question of infringement, one has to interpret the claims of the patent in connection with the specification and drawing, and with a full knowledge of the state of the art prior to the issuance of the patent. If the Government, in every instance, should follow this practice, it would probably reduce the number of patents to one-half of what they are now, and, moreover, there would be opportunity for more injustice to be wreaked than there is at present. The Patent Office makes many mistakes now in issuing patents through defective searches, or for other causes, and if in addition it was put to the necessity of passing on the question of infringement, the mistakes would be multiplied many times.

If one were to stop and think, he would see that the transfer to the Patent Office of the responsibility of determining whether a patent to be issued is an infringement on some prior patent, and of denying the issuance of the patent if it is an infringement, would mean the adoption of proceedings that would hold up the grant of the patent many months and even years. Even courts make mistakes in holding patents valid or invalid, but their mistakes can be corrected by an appeal in many instances, and few patents ever get into the courts. The mistake of the Patent Office in refusing the patent on this ground would mean much hardship and frequently be irreparable. We do not believe that the patent system should ever be changed so as to provide for the denial of patents on inventions which are infringements on prior patents. We do not think that any one, who is thoroughly familiar with Patent Office practice, has ever suggested this plan. It would, of course, be an ideal condition for the patentee who invented and patented the basic idea, but the hundreds of later inventors who made improvements on the basic idea would naturally feel that they had been discriminated against. Such a plan, if adopted, would tend to discourage invention, and retard progress.

Take the telephone as an instance. Every patent issued in the telephone art, after the courts had interpreted the Bell telephone patent, was an infringement on that patent. Yet, if the Government had stopped granting patents on telephone improvements, we would not have the telephone as it exists today. While all due credit should be given to the man who invents the basic idea, and his patent should be broadly interpreted so as to give him the largest measure of protection, yet it is a fact, known to every one who is familiar with the mechanical arts, that the adding of improvement upon improvement builds up the basic invention until it is a commercial success, and that without the improvements added from time to time, the original or basic invention would end in failure. This was true of the sewing machine, the linotype, the harvester, the printing press, and every machine that is now a vital part of the industrial life of the country. All honor and great reward to the man who makes the basic improvement, but let the subsequent inventors be given their share of credit and compensation, for without them the real proportion of the first or basic improvement would assume less value.

Machines that Think.

There is not only a vast amount of physical effort saved by ingenious mechanical devices, but much mental activity as well. It is predicted that in the near future, nearly all muscular industry will be superseded by machinery. Those familiar with what is being done by mechanism appreciate that a great deal of mental industry has also been superseded, although there are well defined limits to progress in this direction, enough is being done to justify the impression that actual intelligence is shown by machines. From the miller's little bell, that sets up a tinkling the moment the hopper runs empty, to the calculating machines now found in banks and insurance offices, clearing houses and observatories, there are so many mechanical substitutes for brain work that it is difficult, at times, to realize that the machines do not themselves actually think. Some of the instances of what might be called mechanical intelligence are found in odd corners of the industrial world. In screw factories, there is an arrangement of machinery by which a rod of metal is pulled rapidly along until it reaches a certain length. Then the end of it is given the shape of a screw, the thread is cut around it and a slot in the head formed, and a perfect screw is snipped off. When the rod is all used up, the machine gives a sharp, impatient ring of a bell to indicate that it needs more material. Anyone watching it experiences an uncanny feeling that the thing knows what it is about.

Then there is the machine that prints railway tickets. These are not, as might be supposed, printed in large sheets and afterwards cut up. The cardboard is cut into tickets first and printed separately afterwards. The little blank cards are put in a pile in a kind of perpendicular spout, and the machine slips a bit of metal underneath the bottom of the spout and pushes out the lowest ticket in the pile to be printed and numbered. It is of no use to try to print a bad ticket. The machine finds out an imperfect blank in an instant, and flatly refuses to have anything to do with it. Tear off the corner of one of the bits of card and put it into the spout with the others in order to see what will happen. The machine stops and will not start again until the imposter is removed. Pull out the damaged ticket and the mechanism will set briskly to work again.

But the calculating machines represent a far higher flight of intelligence. The work of thousands of clerks has in the last few years been taken over by small machines, very much like typewriters in appearance, by which columns of money in large or small items are instantly added up with none of the risk of error which even the most practiced accountants are liable to make. There are, let us suppose, a hundred checks to be added. They are handed to the operator of an adding machine, who registers the various amounts on a roll of paper by manipulating keys resembling those of a typewriter. When the whole hundred checks have been entered, a lever is pulled and the sum total is shown instantly. Among the greatest feats performed by clever bank clerks in the old days was the running up of a column of money by a single process; that is, taking the columns of dollars and cents at the same time. The adding machine does that, in some instances, with any number of checks, not only by a single operation for both columns, but by one motion of its mechanism. It beats the greatest achievements of the old bank clerk.

But the work of even these machines is elemental compared with that of some other mechanical arithmeticians. There are machines that calculate to 15 places of decimals, and that carry out the most formidable computations in various modes of notation. The clerical staff of many of the big insurance companies has of late years been considerably reduced by the employment of mechanical calculators. One of these, the invention of a German, is a compact little affair, resembling a music box. It may be made to perform almost instantaneously the most portentous sums in addition, subtraction, multiplication and division. It can multiply by one, two or three figures, it can square and cube. If it were desired, for instance, to multiply 531.975 by 924, you print the first named figures on the sheet as you would print letters on a typewriter: then you turn a hande four times, push a slide along one space, turn the handle twice, push the slide along, and turn the handle nine times. The multiplication is complete without the possibility of error so far as the machine is concerned, and the dial at once shows 491,544.900. In the same way other arithmetical processes may be done.

Among the latest of the applications of mechanism to work is one which will do away with much brain cudgeling over the counters of stores. This is a scale which not only shows the weight of goods, but the exact value of the same at any price per pound to which a rate pointer may be set. Thus if the pointer is set at eleven cents per pound, and two pounds seven ounces of meat be put into the scale, the indicator will at once show to the customer the exact amount he should pay. Or if a customer wishes to spend a dollar on a certain article at so much per pound, the scale will show precisely the weight that the purchaser should have for that amount of money.

The mathematical faculty has often been said to be the lowest of the intellectual powers, and it is certainly curious to see its functions being thus taken up by mechanism in so many directions.

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Typewriting, Keyboard machine for setting and distributing type for facsimile.....A. Heger
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Water motor.....I. H. Dungan
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Issued February 27, 1912.

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Calendar, Daily appointment.....C. W. Strayer
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Phonograph reproducer.....T. A. Edison
Phonograph sound amplifier (Reissue).....V. E. D'Urso
Phonograph stop, Automatic..M. E. Lewis
Photographer's developing frame.....L. Grubman
Piano.....T. P. Browu
Picture films and the like, Container for..B. W. Beadell
Pieture frame support.....G. A. L'Hommedieu
Pietures, Apparatus for showing kinematographic.....A. Engelsmann
Pile.....A. Gundersen
Pile driver, Automatic....J. N. Warrington
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Pile wire lubricating device.....F. Farmer
Pin remover.....C. Z. Smith
Pipe cutter.....J. R. Long
Pipe joint clampiug device.....R. S. Lord
Pipe machine.....W. McConnell
Pipe tamper, &c.....P. Dodge
Pipe wrench.....A. Serfoss
Pipe wrench.....R. Geoffroy
Piston lift.....D. F. Denham
Piston rod extension guide....C. L. Heisler
Planter and fertilizer distributer, Combined.....J. H. and L. F. Robinson
Planter, Check row coru.....W. E. Gilroy
Plauter, Seed.....J. G. Oliver
Plaster board machine.....E. A. and G. H. Herzberg
Pliers, Adjustable packing..C. A. Cummings
Plow harrow attachment.....H. B. Wilson
Plow, Motor.....D. B. Hill
Plows, Gage deviee for.....N. Weiler
Pneumatie wheel.....A. C. Schroeder
Pole reversing timer or distribnter.....E. S. Lincolu
Posts and well tubing, Machine for driving.....A. A. Mouchet
Potato digging maehine.....M. McIlveene et al.
Pounding up maehine.....R. F. McFeely
Power generator.....G. A. Krohn et al.
Printing machine, Ticket.....J. White
Printing press.....W. H. Smith
Printing presses, Impression mechanism for.....W. K. Hodgman
Propeller, Adjustable.....F. Harlow
Propeller, Screw.....C. H. Draper
Propeller, Serew.....J. Leopold
Pulp, Machine for manufacturing sheets, boards, tnbes, and other articles from.....A. R. Kolb
Pump.....J. L. Oakes
Pump.....C. R. Pratt
Pump.....C. F. Preseott
Pump, Antomatie self paeking plunger.....E. J. Schneider et al.
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Rail joint.....L. Mueller
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Rail joint castings, Molding..C. A. Weeks
Railway, Eleetrie.....N. H. Turner
Railway, Elevated.....W. Malouey
Railway, Elevated electric..F. T. Thurber
Railway joint.....A. Whitlow
Railway line marker.....T. E. Sutton
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Railway toilet.....G. V. A. Brown
Railways, Electric semaphore signal for.....W. K. Howe
Range fiuder, Single observer..A. Barr et al
Razor, Safety.....A. Buttuer
Razor stropper.....D. Waters
Reamer.....W. McColgan
Recording aud adding machine.....G. W. Dudley
Reflector of glass, Compound shade.....O. A. Mygatt
Refrigerator.....C. D. Stoll
Refuse receptacle.....M. A. Borochow
Registering mechanism locking device.....G. Johnson
Relay movement.....W. K. Howe
Relay, Time and current limit..A. S. Cubitt
Resistance material, Making..E. Weiutraub
Revolvers, Automatic shell ejecting device for.....C. Foehl
Rheostat.....L. C. Eilertsen
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Rock core drill.....W. R. Wallace
Rock drill and chipping hammer, Electro-magnetic.....C. E. Adams
Rodent poisoning device.....D. E. Smoot
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Roost, Chicken.....R. E. Finley
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Sash lifter.....F. J. Odermatt
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Sash ratchet, Deck.....A. E. McKinnon
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Scale.....J. Foerst
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Scaling device.....G. F. Lehberger et al.
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Scraper and grader, Road....S. E. Hughes
Screening or separating machine.....J. J. Green
Seats, Attachment for hinged.....W. G. Wiuans
Seats, Side standard for.....W. B. Cogger
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Shade roller fitting, Window..A. Kaiserman
Shade roller fixture, Curtain.....J. J. Houlahen
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Sharpener, Razor.....A. E. Latta
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Shears cutter, Animal.....M. W. McArdle
Sheet feeding mechanism, Gage for.....M. H. Piper
Shipping case.....K. I. Hermau
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Shock absorber.....C. H. McCombs
Shoe forming machine.....A. W. Dunn
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Shutters or curtains, Mechanism for raising and lowering.....E. H. McCloud
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Silo roof construction.....C. W. McClure
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Spraying device.....H. J. Haber
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Square, Folding.....J. O. Ostman
Stacker.....S. R. Fergus
Stamp or label affixing machine.....E. R. Jones
Steam separator.....E. D. Packard
Stem making machiue, Automatic.....J. E. Graybill
Sterilizing apparatus.....J. H. Scott
Stiffening device for garments.....M. M. McDermott
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Stitch forming device....S. W. Wardwell
Stock and die.....A. O. Ekorenrud
Stoker, Automatic.....G. W. Phillips
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Stove, Heating.....G. L. Menk
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Strip feediug mechanism.....W. H. Bazley
Suction device for dust laden air.....K. Spitzer
Suit case bracing device.....L. Spiro
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Swagiug mill (Reissue).....G. H. Blaxter
Switch and branch plug, Combined.....F. Graf
Syringe.....V. H. Ward
Tack weighing and packaging machine.....W. O. Taylor
Tape, Steel.....J. M. Ezzell
Teeth, Apparatus for making backing for..O. M. Polin
Teeth, Manufacture of cased metal pins for artificial.....H. A. Edwards
Telegraphy, Illustrative (2 pats.).....N. S. Amstutz
Telephone pay station cabinet.....H. I. Wiechers
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Test indicator, Universal.....L. W. Zuegner, et al
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Tire protector.....R. V. Hastings
Titanium aud silicon, Compound or alloy of.....A. J. Rossi
Tobacco knife.....P. Faucher
Tongs, Casing.....E. J. Bates
Tool, Animal handling.....W. A. Streeter
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Toy.....J. J. Mahan
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Track constructiou.....E. F. Davis
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Traction wheel.....C. B. Lord
Transformer, High voltage...W. S. Moody
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Trolley.....R. McMillen
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Trowel, Putty.....S. F. Wright
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Twine machine, Grass.....O. T. Waite
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Typewriting machine.....C. V. Oliver
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Uniting objects.....L. H. Baekeland
Uterine supporter.....E. F. Shaulis
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Vacuum insulated vessels, Stopper for...H. Klett
Valve.....J. Shaw
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Valve, Automatic inlet..S. C. Cornett et al.
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Valve, Automatic relief.....C. E. Miser
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Valve for explosion engines....A. C. Krebs
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Vegetable washing and scalding apparatus..G. E. Wright
Vehicle gear.....C. A. Wiberg
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Veutilator and deflector.....T. T. Peddy
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Vise.....T. T. Merriman et al.
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Water cooler.....R. Bonnell
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Wave motor.....J. W. Denny
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Issued March 12, 1912.

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Air brake, Derailment.....E. N. Boisseau
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Air moistening device, Automatic.....W. A. Russell
Air moistening device for heating apparatus.....W. A. Russell
Airship.....L. C. Badeau
Airship.....C. H. Tower
Alloy or metallic compound, Anticorrosive.....G. Jacquet
Animal trap, Electrically operated.....R. L. Barnhardt
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Automatic switch.....T. E. Lee
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Automobile starter.....H. P. Maxim
Automobile steering post, Adjustable.....R. Symmonds, Jr.
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Candlestick, Miner's.....A. Viera
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Car.....S. Otis
Car fender.....F. M. Roush
Car journal cooling apparatus.....F. H. Collins
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Electric snap switch.....W. V. Steiger
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Floats and sinkers, Line connecting device for.....J. W. Colley et al.
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Fluid meter.....E. P. Coleman
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Flying machine.....J. A. Goodwin
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Gas apparatus, Condenser for.....E. R. Angell
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Gas lighting, Manufacture of incandescence bodies for.....C. R. Bohm
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Gate, &c., spring.....F. W. Mock
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Gears, Centering device for radial draft.....E. H. Schmidt
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Grain cleaning machine.....H. E. Walker
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Grate.....R. W. Revell
Grinding machine.....A. B. Fowler
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Gripper.....R. F. McFeely
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Hat pin guard.....H. Roberts
Hat pin guard.....A. E. Aldridge
Hat pin holder and sheath..H. S. Deaner
Hat pin, Safety.....W. S. Childress
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Lathe center.....L. S. Rich
Lecithin, Producing.....H. C. Buer
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Letter box plate.....F. F. Field
Life net holder.....J. W. Kyle
Life raft.....C. R. McCotter
Life saving apparatus.....M. Olsen
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Logging bunk.....P. A. and F. J. Anlauf
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Lubricating pneumatic machinery.....E. A. Emery
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Mail box transmission system.....J. McGee
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Issued March 19, 1912.

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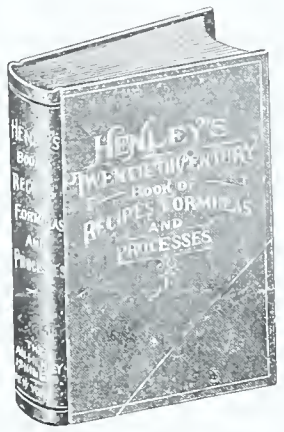
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Hat pin head, Detachable...W. L. Friedman
Hat pin protector.....G. Balog
Hat pin, Safety.....C. B. F. Weidlog
Heat distributing system.....W. E. Smith
Heating system, Water.....J. W. Gamble
Heel, Repair.....G. D. Coates
Heel seat maker and counter pounder, Rotary (Reissue).....I. E. Fletcher
Horseshoe, Supplemental.....A. Bernstein
Hose coupling.....A. B. Magnuson
Hub brake.....A. Carlson
Hub plate, Wheel.....M. Christman
Hydrant outlet.....M. O. Linscott et al.
Hydrocarbon burner.....R. W. Lawton
Ice, coal, ores, &c., Machine for picking, breaking, and operating on...A. B. Judson
Ice machine.....D. L. Holden
Ignition device.....D. Holden
Incubator.....W. E. Smith
Induction furnace.....R. Fleming
Inseam trimmers, Feeding device for.....W. B. Keighley
Insulator.....A. M. Bourke
Insulator covering.....W. J. Moeller
Internal combustion engine....W. H. Ogden
Jeweler's gage.....L. K. Malvern
Jock strap.....L. C. West
Journal box, Car axle.....H. H. Hewitt
Key.....F. C. Eckert
Knuckle pin retainer.....J. Kelso
Lamp base, Reversible.....T. A. Willard
Lamp chimney holder.....D. Dudley
Lamp fixture, Electric.....F. L. Raynor
Lamp, Gas....F. J. and H. R. Humphrey
Last.....H. A. Ballard
Lasting machine (2 pats).....A. Bates
Lead and purifying and improving the same.....A. J. Rossi
Leather, fabrics, &c., Composition of matter for the treatment of (2 pats.).....D. O'Keefe
Level.....V. A. Wilson
Lifting jack.....G. R. Booth
Light diffusing mechanism....V. E. Elson
Lightning arrester.....L. T. Lineberger
Load binder.....F. A. Kenney
Loader, Beet and vegetable...L. C. Jensen
Loading apparatus.....P. L. Holcomb
Lock.....R. Schoell
Locking device.....C. L. Seeley
Locking washer.....C. Bauer
Locomotives, Steam pipe for articulated.....C. J. Mellin
Log carrying car.....W. A. Holt
Loom.....E. H. Ryon
Looms, Controlling mechanism for automatic feeler.....A. E. Rhoades
Looms, Thread collecting means for automatic.....A. E. Rhoades
Lubricating compound for compressed air apparatus, Solid.....E. A. Emery
Mail bag station crane.....A. Hupp
Mail exchange system.....A. Hupp
Mail pouch lock and tag holder...F. J. Beck
Mast step and foot block, Self locking.....R. H. Blackburn
Match-making machine.....H. A. Gsell
Mausoleum construction.....V. J. and C. F. Dietz
Measuring electrical currents, Meter for...A. Loewenberg
Medicinal needle.....G. G. Ford
Metal pans, Machine for folding the corners of.....E. J. Wittebolle
Metal working machine reel...O. A. Smith
Metallic tie and joint.....J. Hajdu et al.
Metallic tie and rail fastener....J. Adams
Mine cages or the like, Safety apparatus for supporting.....C. Dickie et al.
Mining apparatus.....E. F. Kellum
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(Continued in May Number.)

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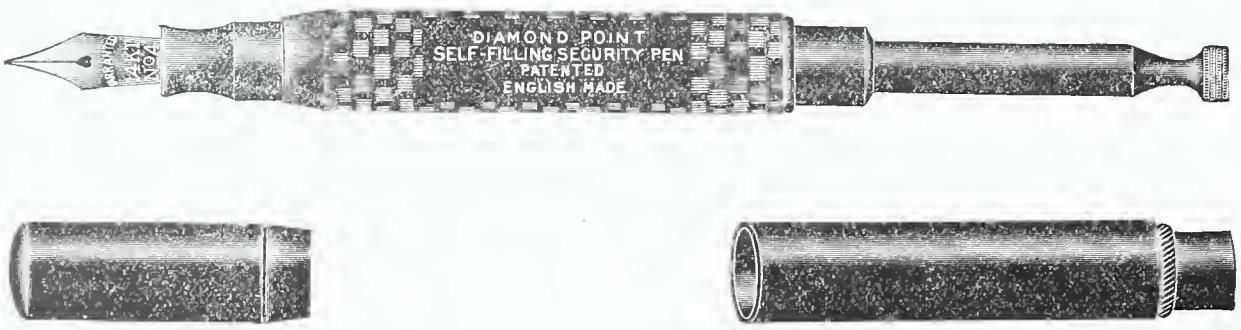
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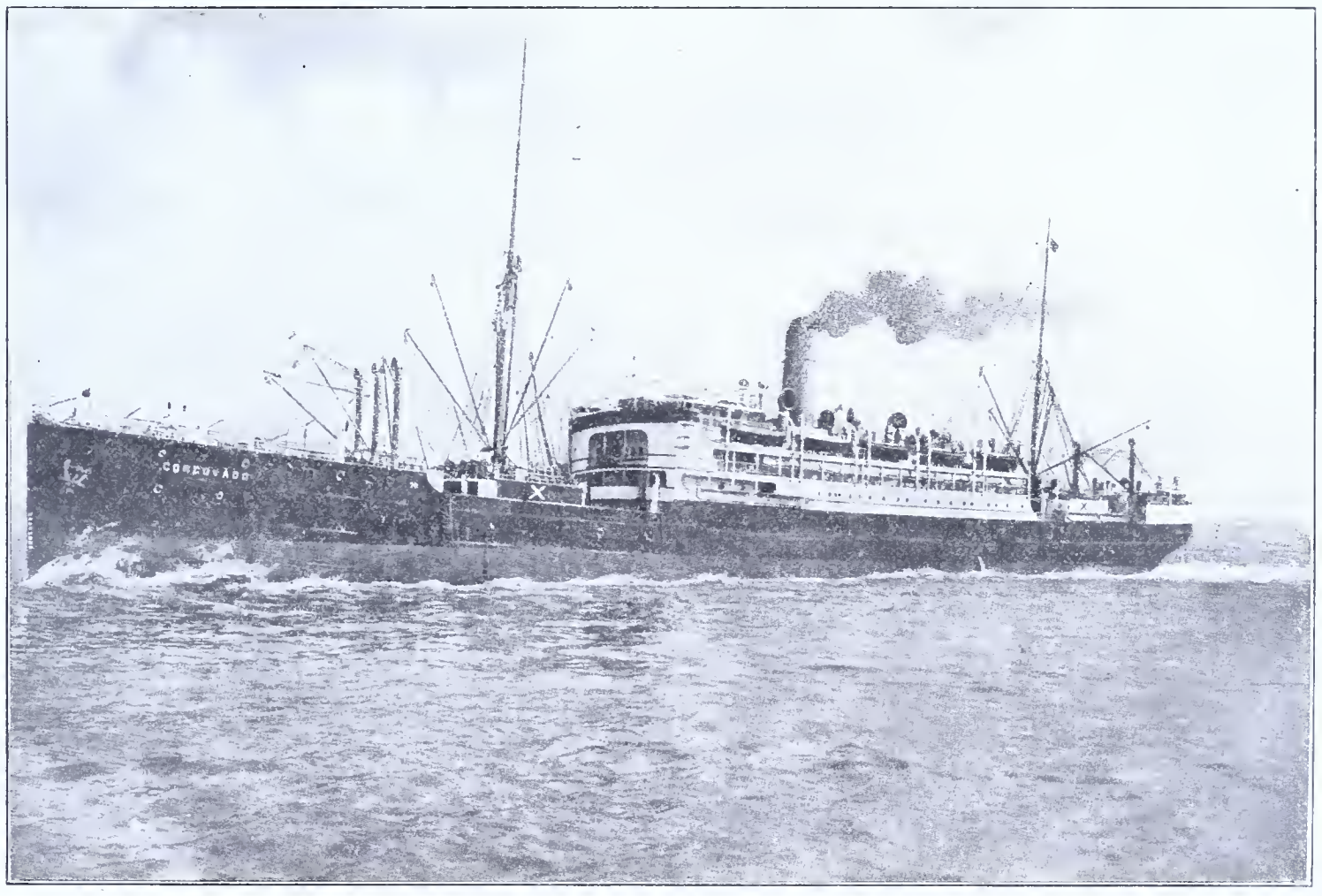
A Journal of Manufacturing Industry and Scientific Progress.

VOL. XXIV. NO. 5. } WASHINGTON, D. C.---MAY 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

A UNIQUE GERMAN ANTI-ROLLING DEVICE FOR SHIPS.

By FRANK C. PERKINS.

THE accompanying drawings (see next page) show the design of the anti-rolling tanks of Hermann Frahm, for damping the rolling motions of ships. This novel construction is said to effectively do away with the disagreeable swaying, to which ships are subjected in a seaway, which is sometimes dangerous for the ship and her cargo. In sailing ships, long continued rolling causes the bolts to widen their holes, the outside planks to get out of place and loosen part of the calking material, with the result that water has entered through the openings and only assiduous pumping could keep the vessel afloat. It is also possible in consequence of heavy rolling for the cargo to shift and do serious harm; while on board a man-of-war the efficiency of her ordnance is considerably reduced by rolling, which also causes her armor-belt to emerge, thus exposing her vital parts to the enemy.



TWIN SCREW STEAMER "CORCOVADO" FITTED WITH ANTI-ROLLING TANKS.

It may be stated that a ship's motion can be divided into two classes: the movement in the longitudinal axis, called "pitching", and the lateral swaying, or "rolling", of which the latter doubtless is more disagreeable in all its consequences than the former. Naval architects have tried hard to overcome the latter difficulty, and the first researches concerning the matter were made as early as the eighteenth century. The first practical experiment, however, was made in the seventies of the last century, when bilge keels were employed. These, placed at both sides of the real keel, are meant to increase the mechanical resistance of the ship against the rolling motion. It is held that bilge keels, if of sufficient size, and placed at the right spot, will to a certain extent dampen this motion; but their efficiency is to be noted only if the rolling is of importance, as they remain practically ineffective against lighter swaying. But bilge keels did not lack disagreeable consequences. Their exposed position easily led to damages, especially in narrow ports and channels, and when docking. In war time bilge keels increase the possibility of the vessel touching a mine. At the same time they greatly augment the resistance of ships, especially when pitching in rough seas, and cases have been known where vessels have lost up to one knot of their speed, after having been fitted with these keels.

Experiments were made in England, three decades ago, in utilizing water chambers, partly filled with free water, for damping the rolling motion on ships. Their efficiency under certain circumstances was proved, but no practical results could be obtained, because the water chambers, reaching right across the ship on the height of the deck, occupied too much room; besides the water, rushing freely from side to side, made too much noise and could not be kept under control. Another device to prevent the rolling of ships is the gyroscope of Dr. Schlick, but its practical value has not yet been definitely maintained. Hermann Frahm, director of the firm of Messrs. Blohm and Voss, Hamburg, has found what is believed to be a simple and at the same time a practical solution of the problem.

It is of interest to study the causes of the rolling of ships. It may be stated that a ship can oscillate about a condition of equilibrium and consequently may be compared with a pendulum, sharing the quality of being easily made to swing by exterior influences, such as for instance, the impulse of waves. Besides, there will be a considerable increment of amplitude from oscillation to oscillation, as soon as the impulses are synchronous and in resonance with the individual

period of the swinging body—in this instance the ship.

It is maintained that like the pendulum, every ship possesses an individual period of oscillation according to her size, shape and repartition of weight. This individual period is to be found only through practical experiments or by means of ample and difficult calculations. It is claimed that all large rolling amplitudes, observed in practical seafaring, are due to the effect of resonance, if the ship is struck by a series of comparatively regular waves and in measure of her individual number of oscillations. Under such circumstances the influence of the resonance will be promptly felt, and there will be, to a certain limit, an increase in the angle of heeling from wave to wave. According to the law of resonance, the phases of oscillation of the ship and of the impulse of the waves will be deferred by 90 degrees.



VESSELS WITH AND WITHOUT ANTI-ROLLING TANKS.

The Frahm invention is based on the principle of utilizing an artificial, secondary resonance in order to annihilate the influence of the primary resonance between the vessel. This secondary resonance is introduced by means of a U-shaped tank, located athwartship, in which a water column can oscillate with the same number of swings per minute, that are peculiar to the ship herself. The tank is designed in the form of a communicating tube and consists of two vertical parts at both sides and a horizontal part, the water filling the latter entirely and about one-half of the vertical basins.

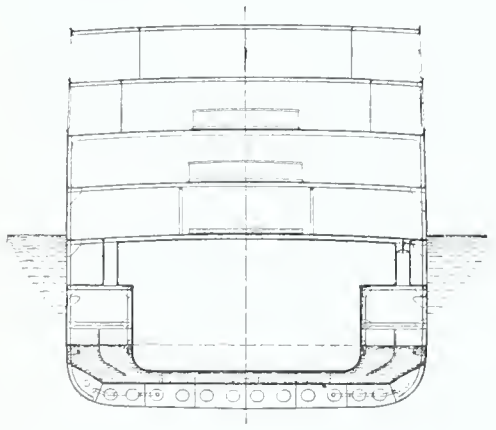


FIG. 1.—CROSS SECTION OF TANK.

Of course the individual number of oscillations of the water column thus enclosed, will depend upon the dimensions of the whole tank, and it will therefore be the designer's task to calculate them accordingly. By the law of resonance, the phases of the impulse of the waves and of the oscillations of the ship are deferred by 90 degrees, that is to say, the ship lags a quarter of her full period behind the waves: or in other words, the ship arrives at the heeling a quarter of a period later than the wave in its advancing movement arrives at its maximum slope toward the ship. Naturally, the same law applies to the rolling of the ship and the oscillating movements of the tank water produced by the rolling. Also in this instance the phases are deferred by 90 degrees, and the tank water will reach its highest or lowest level in the vertical parts of the tank a quarter of a period later than the greatest heeling of the ship to one side or the other. Therefore there results a total difference between the impulse of the waves and the oscillations of the tank water of 180 degrees, and the latter will act in just the opposite direction to the impulse of the waves, so the ship will heel only as far as the water, under the action of secondary resonance, rises or falls in the vertical basins. Thus the heeling movement imparted to the ship by the waves is balanced by the opposite turning movement produced by the oscillations of the tank water.

It may be stated that the increment of heeling, from oscillation to oscillation, cannot take place now, and the rolling motions will be limited to those sufficient to produce the necessary oscillations in the tank water in accordance with the foregoing explanation. It is of interest to note that the upper parts of the vertical basins are provided with a throttling apparatus, which serves first of all to give passage to the air contained in the tank device. By simply blocking it, the water in the vertical tanks is working against a kind of air buffer, and its motion is almost stopped. By opening the throttling valve the air is again given free passage, with the result that the water in the vertical basins can swing freely. Besides, the air passing through the upper connection can be more or less throttled in order to adjust the oscillations of the water to the conditions of the sea. This air connection has proved useful when working the tanks on board ships.

It may be mentioned that the first tests with this anti-rolling device were made on board the S. S. "Ypiranga" and "Corcovado," both passenger steamers on the Hamburg-American line. These ships, of about 12600 tons displacement each, although new, of excellent construction, and fitted with bilge keels one foot in depth over about two-thirds of their length, were said to be bad rollers, and therefore made excellent subjects for trial. These vessels, constructed as sister ships, were fully completed when the tanks were installed. There are two sets of anti-rolling tanks, one fore and one aft, placed in the position of the masts on the uppermost end-to-end deck, between the loading hatches. The upper parts of the lateral basins were connected by a flying bridge, in order to obtain the necessary space for the steam winches which had to be shifted, because the lower connection of the basins had to be carried over the deck.

The accompanying drawings, Figs. 1 and 2, show the details of the tanks of the "Corcovado." The lateral basins have been fitted with guiding plates for better guidance of the water rushing from one side to the other. The tanks are filled by the existing general service pump and discharge directly outside through floor valves on each side.

The tanks had to be added after the ships had been completed and made several journeys, and therefore the anti-rolling device had to be adapted to existing conditions of shape and dimension. In order to obtain greater safety, each air connection has been fitted with two throttling valves, but as a rule one valve seems to be ample. It may be stated that the mail steamer "General" of the German East African line was also fitted with the anti-rolling tank. In this case the addition of the device was resolved upon when she was still under construction and the tank was placed in the cargo hold, immediately on the double bottom. In a gigantic passenger

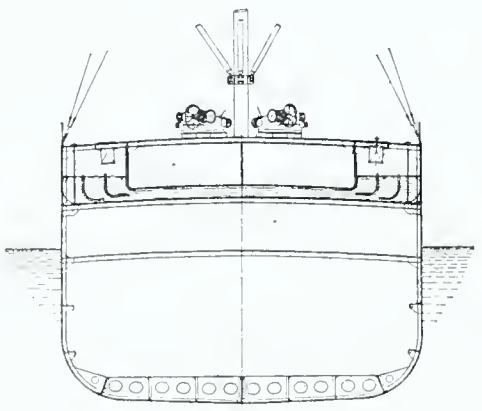


FIG. 2.—TANK PLACED IN HOLD.

steamer the tank is located in the middle of the ship and occupies a space hardly available for other purposes. The lateral basins are sixteen inches broad and carried through two decks. This steamer is designed for a length of 840 feet, a breadth of 98 feet and a draft of 32½ feet, with a displacement of 51000 tons, while the weight of the water in the tank is only 345 tons. It will be seen that the size of the tank, though calculated for sufficient efficiency under very unfavorable circumstances, is of hardly any importance compared with the size of the ship.

It may be stated that the proper weight of the anti-rolling tanks compared with the ship's weight is very low. It further has to be borne in mind that the tank water is to be carried only if rolling is on, or to be expected. For filling the tanks fresh water, carried for the ship's purposes, or liquid fuel may be employed. The total weight of water required for the action of the anti-rolling device varies according to circumstances, from 0. 6 to 1 per cent of the total displacement of large and medium sized merchant vessels, while the proportion for smaller ones may be slightly higher.

The results obtained with the anti-rolling device are of special interest. It is said that the "Ypiranga," fitted with the anti-rolling tanks in the works of Messrs. Blohm and Voss, started on her first voyage and during this trip, in the presence of a number of nautical and technical experts, the results were so convincing that it was decided to fit the anti-rolling tanks also on her sister ship "Corcovado."

The Frahm anti-rolling device is of special value for use on board of the man-of-war, although in the above description the application of the anti-rolling tank to merchant vessels has principally been dealt with. The disadvantages of rolling to a man-of-war have already been mentioned in the introduction. A steady ship will always be welcome to passengers, but a steady gun-platform is almost indispensable to the gunner. Future naval battles will depend to an extraordinary extent on the guns, and every device tending to improve the efficiency of ordnance is to be regarded as a valuable improvement in an up-to-date battleship. It is maintained that for the location of the device on board warships some technical difficulties arise, but they are sure to be overcome, the more so as a special form of the anti-rolling device has been worked out by the inventor for use on the man-of-war.

New Marconi Station.

The station for wireless transmission which is now being established on the west coast of Ireland, has an exceptionally favorable location. It will be situated on a mountain a couple of thousand feet in height, on the verge of the open sea. The aerial will not be supported on a pole in the usual manner, but will be suspended in a far flung span between two of the mountain peaks. A person who has had an opportunity to observe the wild gales that sweep along this exposed coast might think that such a span could not withstand the wind; but experiments on such a system in the neighborhood have led the engineers to think the undertaking feasible. Water power is to be used to generate electricity. On top of the mountain are two lakes which yield a limitless supply, with a possible height of fall in comparison with which that at Niagara would appear insignificant. It is planned to carry a 24-inch pipe up the face of this mountain and construct an electric power plant that will in itself be most remarkable.

AN IMPORTANT DECISION.

Affecting the Wright, Curtiss and Other Aeroplanes.

The Mattulath Abandoned Application.

The Patent Office Reversed by the Court of Appeals.

A decision which will affect the patents of Wright, Curtiss and other aeroplane inventors has been handed down by the District Court of Appeals through Chief Justice Shepard. The court reversed the action of the Commissioner of Patents and authorized the reinstatement of an application of Hugo Mattulath for a patent on a flying machine, filed January 8, 1900.

The application for the reinstatement was made by Mrs. Meta Mattulath, widow of the inventor.

WHY APPLICATION WAS DENIED.

In March, 1900, the examiner in the Patent Office regarded the flying machine as inoperative. "No successful attempt has yet been made," the official then wrote, "to rise from the the earth's surface by means of an aerial vessel unprovided with a balloon.

"The results of previous experimentation indicate that even if the rising could be successfully accomplished, the vessel would be uncontrollable through its inabilty to maintain its normal position or balance. However plausible applicant's theory may be, in view of the present state of the mechanic arts and the results of previous experimentation, the step is so long from the theory to actual use and the practicability of the apparatus is so problematical that actual demonstration of operativeness will be required before the grant of a patent."

INVENTION WIDOW'S ONLY PROPERTY.

Mattulath was a resident of New York when he applied for his patent, but was temporarily in Detroit, Mich., when he signed the papers. He later came to Washington, where he died, December 30, 1902. The invention was the only property he had to leave his widow. The application was entered on the records of the Patent Office as abandoned October 3, 1903.

November 23, 1910, Mrs. Mattulath filed a petition to revive. She stated that while she and other members of his family knew that her husband had worked on the invention of flying machines, none of them had knowledge of the existence of the application until October, 1909, when an attorney applied to her to sign a paper allowing him access to the file of the patent. She secured an attorney and thought he had made application for her, but death intervened again and removed the attorney.

Mrs. Mattulath then obtained her present counsel, who asked reinstatement on the plea that the delay was unavoidable, but in a decision of March 25 last Assistant Commissioner Tennant denied the application. This decision is the one reversed by Chief Justice Shepard.

DELAY IS HELD UNAVOIDABLE.

The Chief Justice in concluding his opinion, says: "We are of the opinion that the delay in this case has been shown to be unavoidable in the proper sense of the statute.

The petitioner has not slept upon her rights and is entitled to the relief which she seeks. Its denial would work a great hardship upon the penniless widow of a deceased inventor of merit, who died almost at the point of success, leaving the invention as his only property."

Several years after Mattulath's application for a patent had been denied, the Wright brothers perfected their biplane, and among the features covered in their patents were the flexible wing tips, by which equilibrium is maintained. Curtiss later started to manufacture a biplane, the plane tips of which were fixed by means of a pivot arrangement. The Wrights filed suit for infringement, claiming that Curtiss' plane tip flexing device was in all essentials the same as theirs, and that as such it constituted an infringement of their patents.

During the litigation it was discovered that the Mattulath application for a patent on an airship contained specifications for a wing-tip flexing device that is identical with that used by Curtiss. Efforts were made in the Patent Office to have the extinct application revived, but the Commissioner refused to take any action. The matter was then taken into the courts, the decision being the result.

The effect of this decision, it is declared, will be this: no matter how the courts may hold in the case of the Wrights against Curtiss, the Wright brothers can only lose. If the Curtiss plane-tip flexing device is decided to be the same as the Wright patent, the old Mattulath application, dating far back of any of the Wright patents, will, it is said, make the Wrights the infringers. If the case is decided on the grounds that the Curtiss device is not the same as that used by the Wrights, there is no infringement.

THE INVENTOR'S NEEDS.

To the Editor of the INVENTIVE AGE:

DEAR SIR:—

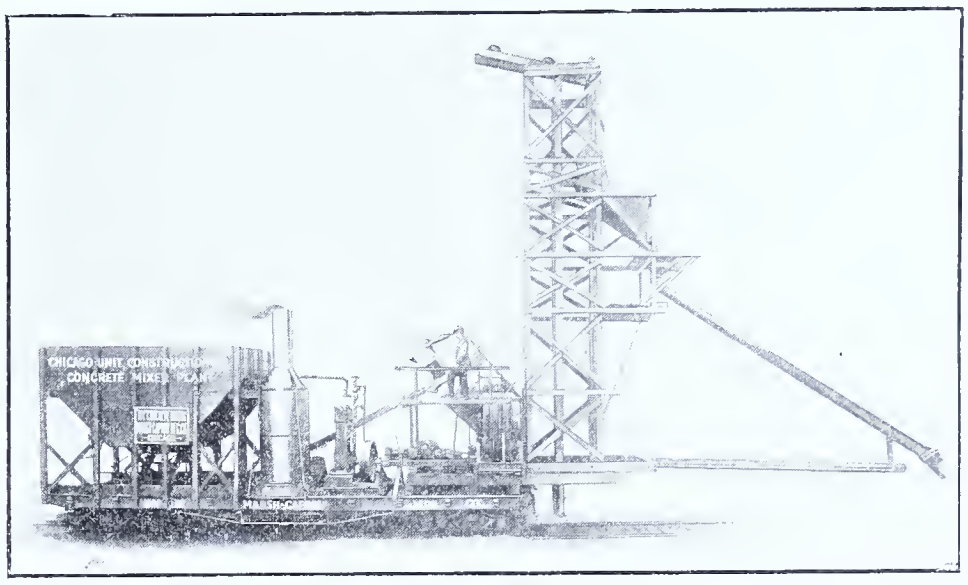
The inventor knows the needs of the world along lines of technical and mechanical improvements and has to a large extent supplied those needs, but so far he has conceived of no adequate plan and no effective weapon to protect himself from the human sharks who try to catch and skin the inventor as soon as he has secured a patent. I believe this sad state of affairs ought to be and can be remedied. I do not believe that men gifted with genius along inventive lines, but who for this reason sometimes lack business acumen, should be made the victims of an unprincipled class who style themselves patent salesmen, but whose only object is to secure from the inventor an advance fee without any intention of rendering an equivalent. Society owes it to herself to protect its benefactors. It can not afford to harbor parasites under the name of patent salesmen whose brains are developed only on the foxy-swindling-money-getting side, and who use the U. S. mails and express companies to carry out their dirty and inhuman work. I believe the inventors of this country can and will devise ways and means of ridding themselves of these unprincipled bipeds. One method I would suggest, though not new, is publicity, a sort of mutual correspondence society among the inventors themselves, who will seek to post one another concerning the business methods not only of patent salesmen, but also of attorneys who delay, suppress and betray valuable inventions, and who in order to keep up prestige will readily rush through an invention of minor importance. This can be done if correspondence between members is confined strictly to facts. For instance, suppose an inventor who reads this wants to know if H. at Philadelphia or G. at Chicago is straight, he sends a self-addressed stamped envelope to me, asking what my dealings, if any, have been with them. I reply giving exact data. First, what they claimed they would do; 2nd, how much they required as advance fee; 3rd, what they really did or did not do; 4th, what benefits if any resulted from the transaction. Having given exact facts and conditions, which is legitimate, we make no further comment, leaving the enquirer to act on his own judgment. Under conditions above mentioned I would be willing to do this merely as a starter. Should you desire to assist inventors in this matter, your paper need not commit itself further than to print the names of inventors from time to time who would be willing to answer such enquiries. The foregoing is one method, perhaps too slow and ineffectual to accomplish much at first. Another method would be to have a central bureau where one could secure reliable information, this to be supported by public funds. The Postoffice Department might take the matter up. There are a great many inventors in the United States, and I believe that some among them will propose a more thorough and practical way of getting rid of these biped parasites, than I have at this time been able to suggest.

E. C. RODWICK, Ukiah, Cal.

RAILWAY CONCRETE PLANT.

The increasing use of cement by railroads has brought about the construction of a concrete plant specially designed for railroad use. The illustration show a self-contained concrete outfit, which includes a hopper, a concrete tower, a mixing apparatus, and a power motor, all mounted on an ordinary flat car. The machine was designed for the construction of bridge piers, culverts, or any concrete structure within reach of the chute.

Referring to the illustration, there is shown a flat car mounted on the usual truck and adapted to run on the rails of a railway track. At the left side of the car is provided a storage hopper which has capacity for sufficient material to make twenty yards of concrete. It is partitioned off so as to provide bins for broken stones,



sand and cement. The outlet gates at the bottom are controlled by levers which are operated by a man who is stationed at the end of the car and the hopper. The material required for the batch is loaded from the hopper onto a skip, and the latter is then drawn up the inclined track, (which may be seen at about the center of the illustration), and at the upper end the skip is automatically dumped into a batch hopper bin, thus keeping a reserve supply of unmixed material on hand.

The illustration shows the skip at the upper end of the inclined track in the act of dumping the material into the hopper. At one side of the hopper, an ordinary rotary mixing drum is provided, and communication is had between the mixer and the hopper by means of a gate, which is thrown open by the operation of a lever. When the hopper gate is released, the charge is dumped into the mixer, which is rotated by the mechanism shown. The mixer may be seen at the end of the flat car close to the concrete tower.

As shown, the car carries a boiler and a steam engine at about the center, which engine not only supplies the power for operating the apparatus, but also the motive power for causing the machine to travel along the tracks. Sufficient power is provided to move the car and two freight cars. The contents of the mixing drum are discharged into an elevator bucket, which is raised in the tower by a cable running to a hoisting drum placed at one side of the mixing drum. The elevator bucket discharges into the hopper, which is shown at the right-hand side of the tower, and from the hopper an inclined chute leads through which the mixed material is caused to run to the desired point.

The operations of discharging the concrete from the mixer into the elevator bucket, raising the latter in the tower and discharging the same into the hopper provided in the tower from whence it passes out through the chute, are controlled by a bank of levers operated by a man who stands on an elevated platform near the mixer. The outer gate for the hopper leading to the mixer can be operated by another man, who directs the swiveled end of the spout, or from a platform near the hopper. A third man controls the outlet gates for the storage hopper. Thus it will be seen that three men operate the entire plant, and are able to do the work of many who were formerly required for such services.

Microphotographic Libraries.

A Belgian scientist has constructed a microphotographic apparatus by means of which rare books, valuable documents and the like may be reproduced on minute photographic plates, in which form they will require much less space for storage than would be necessary for the originals. The apparatus (described in a recent issue of *Popular Mechanics*) can reproduce 50 octave pages (each 6 x 9 inches) on one 3½ x 4¾ inch plate. For instance, the 150 odd reading pages of a magazine could be reproduced on plates the aggregate size of which would be about three-fourths of a single plate. It is planned for each library that possesses the collection, by which the tiny plates may be magnified for the use of the public. Rare manscripts would then no longer be generally accessible, but only the photographs thereof, and all the larger libraries could, at comparatively small cost, obtain reproductions of all rare and important documents.

CLEVER NEW PATENTS.

NEW WATER MOTOR.—MINER'S SAFETY LAMP.—SAFETY ALIGHTING ATTACHMENT FOR FLYING MACHINES.

New Water Motor.

Something new in the line of water motors is illustrated herewith. Jose Gonzalez, of Laredo, Texas, has made a device that can be placed in the current of a stream and by means of a simple apparatus, can pump water to any desired height or distance. A concrete base is formed in the bed of the stream, and supports are arranged therein for a turn table. On this is journaled a shaft carrying water wheels. Above this shaft is also journaled a crank shaft, and both shafts carry gears. Connected with the first-mentioned shaft, and carried by the turn table is a suction pump, and another suction pump is connected to the crank shaft and is carried by the support, both pumps being operated by the water wheels for drawing water.

In order to operate the turn table, a cable or wire is provided, which is secured to clamps thereon, and after leaving the turn table, extends over pulleys on the supports and also to pulleys on a pipe which extends shoreward, and is intended to convey water to any point desired. After passing through pulleys the cable is secured to a sprocket chain, which is in turn fastened to a gear wheel. This latter is secured at a distant point on the shore, and is mounted on a support which is provided on its upper surface with ratchet teeth, so that the tension of the cable may be adjusted. The water is conveyed from the suction pump to the pipe by means of a flexible tube.

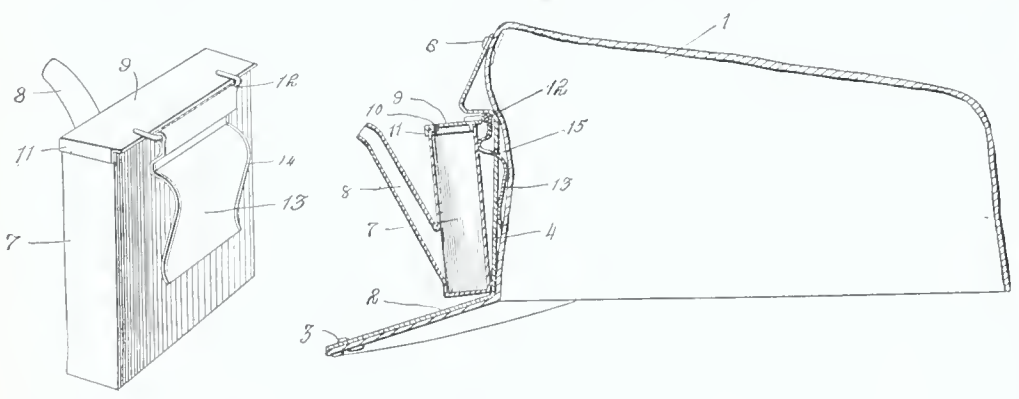


When it is wished to start the machine to working, the wheel on the shore is turned in order to operate the cable, and to revolve the turn table in such a direction that the water wheels will be parallel with the current of the stream. Motion is transmitted from the water wheels to shafts and gears which operate the rods connected with the suction pumps. Water is drawn into these pumps through strainers, and is conveyed through the pipe to any desired point. After the desired quantity of water has been pumped, the wheel on the shore is again turned, thus drawing the turn table in such a direction as to bring the water wheels at right angles to the current of the river, thus causing the motors to stop operating.

It will be seen that the motor is simple in construction and can be made without heavy expense. It can be used in a current of only three miles an hour, although of course if the current is swifter the motor profits thereby. It can be worked as a horizontal or a vertical motor, and the water can be transmitted to a dynamo, mill, or any machine to which it is wished to send power.

Miner's Safety Lamp.

In the usual method of securing lamps to a miner's cap, a wire hook is provided which is adapted to attach the lamp to the cap shield. This permits the swinging of the lamp incident to the movement of the head of the miner, and often the light of the lamp is thus extinguished, and the miner is left in the



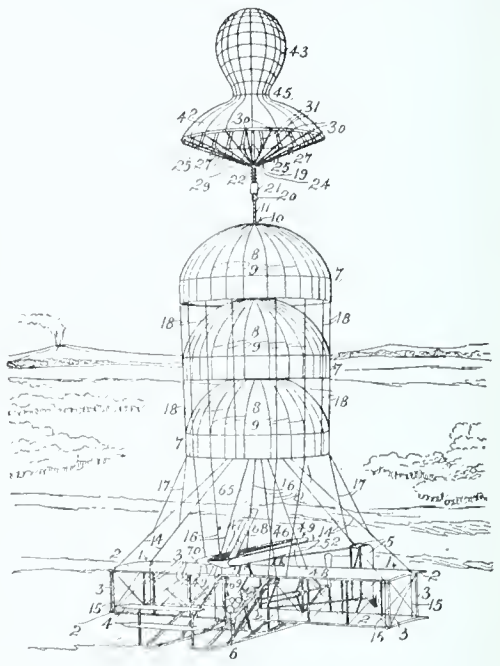
dark, and subjected to the danger of contacting with the bracing of the mine or of falling across the track of the motor cars. An invention by Matthew F. Smith, of Ransom, Ky., is intended to provide a shield lamp which has means that will prevent the accidental removal of the lamp from the cap, but will hold the lamp firmly against movement in one direction, and at the same time may be readily removed from the cap when desired.

In the drawings, which show a perspective view of the back of the lamp, and a longitudinal section of the cap with the attachment, it will be seen that the shield has an offset portion which forms a stop for the lamp. The lamp is of a rectangular cross sectional formation, and has a cover formed with flanges adapted to engage the inner and outer edges of the open top of the lamp. A flat resilient tongue 13, at the back of the lamp, has heads on its vertical edges to increase its strength. A rectangular opening 15 occurs in the shield below the stop, the opening being of a size to receive the tongue 13, and the tongue is curved, having its lower end almost touching the back of the lamp. When the tongue passes through the opening, the inner face of the tongue tightly engages the rear face of the shield, while the upper part of the lamp contacts with the stop, so that the accidental removal of the lamp from the shield, or swinging thereof, is prevented. This construction, it will he seen, can be placed upon any cap, and will sustain the lamp without danger of accidental displacement.

Safety Alighting Attachment for Flying Machines.

The heavier than air machines now being employed include one or more planes mounted on a keel frame, an elevation rudder, a direction rudder, stabilizing devices and a propeller which drives the machine forward with enough force to cause the air to sustain it. Should the speed diminish too much, the force of the air current against the under side of the supporting planes will fail to overcome the action of gravity, and the machine will fall. Jean Francis Webb, of New York City, has invented a device to be used by the aviator if the machine should become disabled and start to drop. It consists of one or more parachutes guyed to the machine and ordinarily held folded on top thereof. An air anchor is also provided to drag these parachutes into position to open up when needed, thus sustaining the machine and breaking its fall. The device is illustrated herewith, 7 designating the parachutes which are composed of an inverted cup-like body of silk, strengthened by cords which connect with the main supporting cable and radiate to the rim cord. The lower end of the cable 11 has a ring to which piano wire slings 14 are secured. The wires pass around the machine to sustain it on an even keel. Cords connect the rim cord with the framework and with the wires. The cable extends up to the air anchor. This has a central rod 49 with a cup at its lower end into which a coil spring 22 projects. At the upper end the rod has a fixture to which ribs are hinged. The ribs are braced and are opened by coil springs. The anchor frame is covered by a cover 42 sewed to the ribs and having a central opening over which the mouth of a balloon bag 43 may be secured.

The case 46 has a depressed portion in its bottom, in which the ejector mechanism lies when the parts are housed. This consists of a light hollow forked frame secured to the ends of torsional springs which wrap around a pin in the depression. When several parachutes are employed they are arranged to nest together, and are then folded up like umbrellas and let into the case 46. The anchor is closed and folded into the case on top of the parachute. The aviator now runs the machine in the usual manner. If he loses control or any accident occurs, he pulls a rope to move a lever which releases the lids of the ejector, when the ejector will throw the contents of the case upward, the



anchor instantly opening to catch the air and form a drag, pulling the parachutes open and forming an effective sustaining means while the machine slowly settles to earth.

It will be seen that in case of need the aviator can throw into the air a powerful parachute which automatically expands, and yet is so light and compact that when nested it offers little air resistance or impediment to the normal action of the flying machine.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

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ST. PAUL ELECTRIC CO. et al. v. McCRUM-HOWELL CO.

(Circuit Court of Appeals, Eighth Circuit Aug. 21, 1911. 189 F. R. p. 849.)

TRADE-MARKS AND TRADE-NAMES—PROTECTION OF PROPERTY RIGHTS—UNFAIR TRADE.

The manufacturer of an electric suction cleaner, for domestic use, not protected by patent or trade-mark, held not entitled to a preliminary injunction to restrain as unfair trade the making and selling by defendant of a similar article at a much smaller price, merely because, for practical and economical reasons, the materials and form of the two artieles were substantially alike, nor because defendant may have designed to obtain some advantage from complainant's advertising, where it was not shown that it attempted or intended to sell its machine as that of complainant, but plainly marked it by a plate giving it a different name.

GRAFF, WASHBOURNE & DUNN v. WEBSTER et al.

(Circuit Court E. D. New York. July 26, 1911. 189 F. R. p. 902.)

1. PATENTS — INFRINGEMENT—DESIGNS.

Whether a design infringes a design patent cannot be determined solely by looking to the elements or the details in carrying out the parts of the design, but the test is whether or not the person desiring to obtain an article bearing the original design would be deceived or induced to purchase the imitation because of its similarity.

2. PATENTS—INFRINGEMENT—DESIGN.

Infringement of a patent for a design for silver plates, dishes, etc., is not avoided by piercing the border of the plate or dish in certain parts of the pattern, which was a well-known decorative means, where the patented design would apply as well whether pierced or not, and where the patentee also in practiee used such piercings.

3. PATENTS—DESIGNS—DOUBLE PATENTING.

An inventor may patent a component detail of a design, and at the same time an arrangement of that design with the addition of a particular style of chasing, without either patent being open to attack as invalid for double patenting.

4. PATENTS—VALIDITY AND INFRINGEMENT —DESIGN FOR SILVERWARE.

The Graff design patents, No. 39,992, for a design for silver plates, dishes, etc., and No. 40,009, for a detail for a border section of the same design, do not show a case of double patenting, nor is either invalid as not the invention of the patentee; both also held infringed.

EXCELSIOR DRUM WORKS et al. v. BORTEL et al.

(Circuit Court, N. D. New York. July 27, 1911. 190 F. R. p. 10.)

1. PATENTS—INVENTION.

In making a structure having two adhering layers of wood veneer or other material in strips, the placing of the strips so as to break joints does not constitute patentable novelty or invention; sueh construction being old in the mechanical art generally.

2. PATENTS—INVENTION—HORNS FOR TALKING MACHINES

The Ruggiero and Bougiorno patent, No. 770,024, for a horn for phonographie and similar machines, composed of separate layers of fibrous material in longitudinal strips so arranged as to break joints, and the Cunnius patent No. 784,385, for a trumpet for talking maehines similarly constructed, preferably of wood, are both void for lack of patentable invention in view of the prior art; also held not infringed, if couceded validity.

JOHNSON v. JOHNSON.

(Cireuit Court, D. New Jersey. Sep. 11, 1911. 190 F. R. p. 20.)

1. PATENTS—INFRINGEMENT—IMPROVEMENT PATENTS.

Where a patent sued on and one alleged to infringe are not pioneer patents and do not embody a primary invention, but are both only for improvements on the prior art, and defendant's machine can be differentiated, the charge of infringement cannot be maintained.

2. PATENTS—INFRINGEMENT-TENNIS COURT MARKER.

The Johnson patent, No. 850,936, for an improvement in tennis eourt markers, is an improvement patent only, and, if conceded invention over prior structures, must be narrowly construed, and is not infringed by the machine of the Johnson patent, No. 929,597.

HURD et al. v. WOODWARD CO.

(Circuit Court, N. D. New York. Sep. 11, 1911. 190 F. R. p. 28.)

PATENTS—SUIT FOR INFRINGEMENT—EFFECT OF PREVIOUS CONFLICTING ADJUDICATIONS.

While a decree of a Circuit Court in an infringement suit against the manufacturer of an alleged infringing article, holding the patent invalid, not appealed from, protects the defendant therein from further suits for infringement of such patent, it affords no protection to its customers or purchasers from them of articles subsequently made by such defendant which infringe the patent, if valid, in vending or using the same, where its validity has been adjudicated by other decisions, affirmed by the Supreme Court of the United States.

GENERAL ELECTRIC CO. v. E. H. FREEMAN ELECTRIC CO.

(Circuit Court, D. New Jersey. May 15, 1911. 190 F. R. p. 34.)

1. PATENTS—CONSTRUCTION—GENERAL AND SPECIFIC CLAIMS.

Where a patent contains specific claims for the one form of structure described in the specification and shown in the drawings, and also broad and general elaims, the latter are not to be so limited as to make them a mere repetition of the speeifie claims.

2. PATENTS—VALIDITY AND INFRINGEMENT— INCANDESCENT LAMP SOCKET.

The Sargent patent, No. 665,582, for a lamp socket, which relates to the insulation of the cap of the shell of an incandescent lamp socket, was not anticipated, and discloses invention Also held infringed.

3. PATENTS-INVENTION-EFFECT OF SIMILAR DEVICES IN OTHER ARTS.

Invention may exist in a patented device notwithstanding the existenee of deviees more or less similar in other arts.

AMERICAN SULPHITE PULP CO. v. DE GRASSE PAPER CO.

(Circuit Court, N. D. New York. July 11, 1911. 190 F. R. p. 39.)

1. PATENTS—SUIT FOR INFRINGEMENT—ACCOUNTING BEFORE MASTER.

On an accounting before a master in a patent suit where both parties have been fully heard and the hearing closed, the master may properly refuse to reopen it on motion of party, where no surprise nor newly discovered evidence is elaimed

2. PATENTS—DAMAGES FOR INFRINGEMENT— PROOF OF ESTABLISHED LICENSE FEE.

Evidence that a complainant granted licenses under two patents for a fixed sum without any division as between the two does not establish a fixed and uniform lieense fee under one of the patents by which the damages recoverable from an infringer may be measnred.

COMBUSTION UTILITIES CORPORATION et al. v. WORCESTER GASLIGHT CO.

(Circuit Court, D. Massachusetts. August 8, 1911. Defendant's Petition for Rehearing, Aug. 26, 1911. 190 F. R. p. 155.)

1. PATENTS—VALIDITY AND INFRINGEMENT —PROCESS OF REGULATING TEMPERATURE OF COMBUSTION IN GAS PRODUCERS

The Doherty patent, No. 829,105, for a process of regulating the temperature of combustion in gas produeers by introducing to the grate a mixture in definite proportions of the waste products of combustion, including carbon dioxide, and of air at a designated temperature for the purpose of reducing the temperature of combustion and preventing the formation of clinkers, was not anticipated and discloses invention. Also, held infringed as to claims 7, 10, and 13.

2. PATENTS—VALIDITY--THEORY OF OPERATION.

Whatever may be the correctness of the theory of operation of a patentee if a new application of old means is suffieiently described to enable those skilled in the art to produce a new and useful result, it is enough to sustain the patent.

3. PATENTS-VALIDITY AND INFRINGEMENT-COMBUSTION REGULATOR FOR FURNACES.

The Doherty patent, No. 844,504, for apparatus for regulating combustion in furnaces, claim 3, is for a true eombination, was not anticipated, and discloses invention; also, held infringed.

4. PATENTS—SUIT FOR INFRINGEMENT—REHEARING.

The discovery after final hearing and decision in an infringement suit of another patent claimed to anticipate the one in suit, particularly where it was referred to in defendant's record and brief, is not a suffieient ground for reopening the case.

REYMER & BROS., Inc., v. HUYLER'S.

(Circuit Court, W. D. Pennsylvania. July. 3, 1911. 190 F. R. p. 83.)

TRADE-MARKS AND TRADE-NAMES—INFRINGEMENT.

The word "Metropolitan," when used by a manufacturer on pound and half-pound boxes of chocolates and bonbons, is an arbitrary and faneiful word, not indicative of ingredients, quality, or amounts, and constitutes a valid trade-mark, which is infringed by its use by another, in conneetion with other words, giving the paekages a similar appearance on chocolate eakes sold at candy stores in the same city and vicinity, where it has beeome identified by long use with the goods of the first user.

THADDEUS DAVIDS CO. v. DAVIDS et al.

(Circuit Court, S. D. New York. June 22, 1911. 190 F. R. p. 285.)

1. TRADE-MARKS AND TRADE-NAMES-NAMES —RIGHTS ACQUIRED BY REGISTRATION-PERSONAL NAMES.

Uuder the trade-mark aet (Act Feb. 20, 1908, c. 592, § 5. 33, Stat. 725 [U. S. Comp. St. Supp. 1909, p. 1278]), which permits the registration of "any mark * * * which was in actual and exclusive use as a trademark of the applicant or his predecessors from whom he derived title for ten years next preceding the passage of this act," any such mark, although, as in case of a proper name, it could not have been the subject of a common-law trade-mark, beeomes a valid trade-mark on its registration, and is entitled to the same kind and extent of protection as would be accorded to any other trade-mark.

2. TRADE-MARKS AND TRADE-NAMES— NAMES — INFRINGEMENT — WHAT CONSTITUTES.

Infringement of a trade-mark is the use by defendant for trading purposes, and in eonneetion with goods of the kind as to which complainant's exclusive right exists, of a mark identical with complainant's or colorably resembling it, although the wrongful imitation need not be exact or perfect, but may be limited or partial.

3. TRADE-MARKS AND TRADE-NAMES— NAMES—INFRINGEMENT—INJUNCTION.

A complainant which by registration had acquired the exclusive right to use the name "Davids" as a trade-mark for inks, held entitled to an injunction to restrain a competing manufacturer from using the name "Davids Manufaeturing Company," or the word "Davids" displayed at the top of their labels.

CROWN CORK & SEAL CO. OF BALTIMORE CITY v. BROOKLYN BOTTLE STOPPER CO. et al. SAME v. AMERICAN CORK SPECIALTY CO. et al. SAME v. JOHNSON.

(Circuit Court, E. D. New York. June 12, 1911. 190 F. R. p. 323.)

1. PATENTS — SUIT FOR INFRINGEMENT— PARTIES.

Individuals who organized a corporation with a small capital for the purpose of enabling them to infringe a patent through the corporation without subjeeting themselves to personal liability, may be joined with the corporation as defendants in a suit for the infringement, and held jointly liable therefor.

2. PATENTS — SUIT FOR INFRINGEMENT— PRELIMINARY INJUNCTION.

In a patent suit, where the parties are not willing to rest the case on final hearing on the papers presented on an application for preliminary injunction, or where the attention of defendants has not been called to the patents by prior adjudications, sustaining their validity, exceptional circumstances must be shown to justify the granting of a preliminary injunction in advance of the taking of the testimony.

BERARDINI v. TOCCI.

(Circuit Court, S. D. New York. July 3, 1911. 190 F. R. p. 329.)

PATENTS—SUBJECTS OF PATENTS—ARTS— SYSTEM OF CODE MESSAGES.

The Berardini patent, No. 839,094, for a "code message," but which is really for a system of devising code messages, is not for an art in the sense of the patent law, and is void. Claims 7 and 8, which are for a record book for use in drafting and deciphering code messages, are also void for lack of invention.

PARSONS NON-SKID CO. et al. v. E. J. WILLIS CO.

(Circuit Court, S. D. New York. Sep. 16, 1911. 190 F. R. p. 333.)

PATENTS—SUIT FOR INFRINGEMENT-EFFECT OF PRIOR DECISION.

Where, in an infringement suit, an alleged antieipating patent was in the record and discussed in the briefs in the Circuit Court of Appeals, the decision sustaining the patent should be construed as overruling sueh claim of anticipation, and should be followed in that respect by a Circuit Court of another circuit.

COLT'S PATENT FIREARMS MFG. CO. et al. v. NEW YORK SPORTING GOODS COMPANY.

(Circuit Court of Appeals, Seeond Circuit. Sep. 5, 1911. 190 F. R. p. 553.)

PATENTS-VALIDITY AND INFRINGEMENT—AUTOMATIC PISTOL.

The Browning patent, No. 580,924, for a firearm, dealing specifically with an automatic pistol, is valid, but is an improvement patent only, and cannot be given a broad construction, but must be limited strietly to the elements as deseribed and shown in the specification and drawings, one of whieh is a barrel mounted on a frame and having a limited double movement—longitudinal and vertical. As so construed and limited, it is not infringed by the deviee of the Searle patent, No. 804,985, in which the barrel is not mounted on the frame and has no movement.

KREPLIK v. COUCH PATENTS CO.

(Circuit Court of Appeals, First Circuit. Oct 3, 1911. 190 F. R. p. 565.)

1. PATENTS—INFRINGEMENT-COMBINATIONS.

The inventive act in a combination patent is the making of the component parts, capable of combination and fit to be united to constitute the combination, and infringement of sueh a patent is complete when the component parts of the combination are made or sold fitted to be put together, and intended to be put together.

2. PATENTS—INFRINGEMENT—COMBINATION.

A permanent injunction was granted restraining defendant from direetly or indirectly infringing the De Piniec-Mallet patent, No. 712,718, for a sliding bed or couch, eomprising two separable metal sections, each having four legs which may be slid together, the smaller under and within the other, forming, when closed, a single, and, when open, a double, bed. Held, that the sale by defendant to dealers of an equal number of larger and smaller sections or cots, unconnected, but adapted and intended by both defendant and the purchasers to be combined into an infringing strueture, eonstituted a direet infringement of the patent, and a violation of the injunction.

3. INJUNCTION—VIOLATION—PUNISHMENT-NATURE OF PROCEEDINGS—JUDGMENT.

In a proceeding agaiust the defendant in an equity case for contempt for violation of an injunction, the court may properly impose a fine for the benefit of the complainant, measured in some degree by the pecuniary injury caused him. Such fine is remedial, and not punitive, and does not exclude punishment of the defendant where the contempt also has a eriminal aspect; and where the proceeding was by petition, separate and distinct from the original suit, and was treated by the court and both parties as a criminal proceeding, in which proof of the offense beyond a reasonable doubt was required, as well as a civil proeeeding, both aspects being considered, the court may in the same proceeding impose such compensatoay fine, and also a seutenee of imprisonment as a punishment.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

John F. Tiner, Uvalde, Texas. inventor; Thomas M. Milam and Wm. D. Kincaid, asssignees, same place. Pipe Wrench.—The invention relates to that class of pipe wrenches made up of a pair of gripping jaws, which are simultaneously actuated by a handle lever operatively associated therewith, and it consists essentially of a pair of triangular shaped plates, a pair of jaws independently pivoted to and between said plates and provided with symmetrically arranged opposed bearing faces in rear of their pivots, an operating handle pivotally supported by and between the plates and arranged between the opposed bearing faces of said jaws to engage the latter at opposite sides of its pivot, antifriction balls on the end of each of the bearing faces of the jaws and also on the end of the handle, the antifriction balls on the jaws engaging the handle and the anti-friction balls on the handle engaging the jaws on the movement of the handle, and a spring mounted between the plates and connected to the jaws in rear of the pivots of the latter for the purpose of holding the jaws normally in engagement with the handle. By this construction a wrench is provided which is composed of a few parts, and is designed to have a wide range of operation, and at the same time possess great gripping power.

Manleff J. Wrenn, High Point, N. C. Folding Stand or Case.—The object of the invention is to provide a folding bookcase in which a slidable and detachable shelf forms the locking means for the case, when the same is in its normal position, whereby upon the removal of the shelf, the bookcase can be folded to occupy but little space. The invention comprises spaced shelves, standards for supporting the shelves and to which they are severally pivoted, a transverse partition hinged to one of the shelves near the center and directly engaging the next adjacent shelf for retaining the case in its unfolded relation, and a slidable shelf guided in ways provided in one of the standards and the said partition and serving as a locking means to retain the partition in its operative position.

Sam J. Minyard, Brookeland. Tex., inventor: T. S. Richardson, Kirbyville, Texas, assignee. Plow.—The object of the invention is to provide a simple and efficient means, whereby the standard and the handles of a plow may be connected with the beam in such manner as to be easily disconnected therefrom, when necessary, for making repairs or other purposes, but is not subject to accidental displacement. The invention consists of a beam having a longitudinal vertically disposed slot at its rear end, a plow standard having its upper end inserted through said slot, a bracket consisting of a solid body fitted in the said slot between the rear wall of the same and the plow standard and diverging arms extending upward, outward and rearward from the said body, handles secured to the inner sides of said diverging arms, and a wedge-shaped key inserted downwardly in the longitudinal slot of the beam between the front wall of said slot and the plow standard. By removing the key, the handle with bracket may be disconnected from the beam and the plow standard also separated from the latter, the key serving the two-fold function of retaining both the standard and the handles to the beam.

Samuel L. Hanson, Albert Lea, Minn. Trolley Shifter.—This invention relates to tracks for feed and litter carriers, and the object of the invention is to provide a simple and efficient connection between the rigid track located within a barn and the flexible track which is employed in the field, whereby the trolley of the carrier may be shifted from the rigid track to the flexible track, or vice versa, without any liability of derailment. The invention seeks to provide a trolley shifter which will be of simple construction, and by which the end of the flexible track will be partly supported and a strong connection provided between the two sections of the track. The invention comprises a base plate having a substantially straight edge at one side and an upstanding rib at the opposite side, said rib being given an ogee form and having one end beveled to merge into the said straight edge, means provided along the straight edge for attaching one end of a track section thereto in alinement with the beveled end of the rib, and a separate track section attached to the plate in alinement with the other end of said rib.

William P. Walker, Macon, Mo. Rain Water Cut-Off.—The object of the invention is to provide a simple device by the use of which rain water from the roof may be directed into a sewer to carry off the dirt and impurities collected on the roof, or may be directed into a cistern for household use. It is also the object of the invention to provide means whereby the cut-off will be supported firmly in either of its adjusted positions, in such manner that dropping of the cut-off from its engagement with the downspout will be prevented. The invention comprises a conducting pipe in vertical alinement with the downspout, a hopper supported by and communicating with the said conducting pipe, a second conducting pipe arranged adjaceut the first-mentioned conducting pipe, and a stem rotatably mounted in the upper end of the first-mentioned conducting pipe and carrying a cut-off spout registering with the down spout and adapted to register with either the second-mentioned conducting pipe or with the hopper.

Adolph O. Krieger, St. Louis, Mo. Bookkeepers' Loose Sheet Holder.—This invention relates to a holder for receiving a single sheet of a loose leaf book for displaying the same in a convenient manner to facilitate the taking of data therefrom in posting books. The invention has for its principal object to provide a sheet holder which is so designed that the various entries on the sheet may be quickly obtained with respect to the different headings, sub-headings, etc., without the necessity of tracing back to the head of the column from which the entry is taken, and also to the name of the customer, thereby enabling the bookkeeper to ascertain at a glance all the necessary information to enable him to properly post the entries: the holder being provided with improved means for supporting the tabulated sales sheet in co-operative relation with a stationary heading corresponding to the heading of the sales sheet, whereby the latter can be turned step by step for exposing each line of entries thereon in carrying on the posting of the books. A further object of the invention is the provision of a sheet-holding frame hav- sheet-feeding means and so mounted that the frame can be raised or lowered to suit the fancy of the operator, and also tilted forwardly on the stand to facilitate the insertion of the sheet.

Ferdinand Fellhauer, Coffey, Mo. Whiffletree.—This invention relates to couplings for whiffletrees. Those now in general use permit a considerable vertical movement to the trees, and also admit of a practically unlimited horizontal movement. The principal object of this invention is to provide couplings for both the single and double trees which will obviate the vertical movement, limit the horizontal movement, and provide a pivot arranged in rear of the trees whereby the pull of the latter will be from the rear, and not from the center, and will, therefore, give to the trees a longer life than those now in general use. It comprises a bearing plate having oppositely extending laterally curved arms at its front end, an integral post extending upwardly from the plate in rear of said arms, a tree holding frame pivotally mounted on the post to swing horizontally over the plate, means connecting the plate and the frame at the front to limit the horizontal movement of the frame, and a curved clip mounted at its base upon the said post and connected at its top to the tree and extending partially around the latter from the rear.

Ralph W. Emmons, East Rochester, Ohio. File Cabinet.—This invention relates to cabinets adapted for use in connection with account credit systems, wherein a plurality of slidable carriers in the form of plates having record slip holding clips are employed. The invention has for its principal object to provide an improved carrier having novel means for slidably and rotatably supporting the same on its track, together with yielding locking means for holding the carrier in alinement with the track for facilitating the withdrawal and the returning of the carrier. The invention consists of a cabinet, horizontal rails mounted therein at the top, carriages movable along the rails, carriers in the form of flat plates of a considerable length, devices for pivotally and detachably connecting the carriers to the carriages and lower pivots for the carriers, slots in the cabinet in which the pivots are caused to slide, said slots providing means for guiding the said pivots. To the carriers are fastened a plurality of spring clips for holding the individual accounts in the usual manner, the clips having a number of plates for distinguishing the various account slips.

John B. Weller Hole, Versailles, Ohio. Barn Door Fastener.—This invention relates to locks and operating means therefor specially designed for use in connection with barn doors of the sliding type, though it can be employed with equal success with sliding doors in other arts. The principal object of the invention is to provide a device in which a foot operated means is employed on the inside of the barn for disengaging the latch from its operative position. A further object is to provide a keeper which is provided with a means adapted to engage the inner side of the door adjacent said keeper for preventing lateral movement of the door when closed. The invention consists of a fixed and movable member, an eye carried by the movable member, a keeper for receiving an eye carried by the fixed member and provided with a guide adapted to engage and prevent lateral movement of the movable member, a spring actuated bolt latch associated with the keeper and adapted to engage said eye, and separate foot and hand operated means respectively connected to the bolt latch for disengaging the same from its operative position.

August F. Tank, Sandusky, Mich. Holdback.—The invention relates to holdbacks, and has for its object the provision of a device of simple construction which will efficiently perform the functions of holding back the thills of a vehicle when the same is being drawn over a down grade, and which at the same time may be readily detached from the thills when it is desired to release the draft animals from the vehicle. A further object of the invention is to provide a holdback which will not wear upon or deface the vehicle thills, and which may be readily applied to any harness without requiring the provision of any particular form of straps or buckles. The invention consists of a rigid U-shaped frame, an endless flexible loop arranged between and rigidly secured to the free ends of the frame and adapted to encircle a thill, and a holding strap inserted through the frame between the closed end of the same and the loop.

George M. Voltz, St. Joseph, Mo. Sill Bar.—This invention relates to sill bars. especially adapted for use in connection with store windows, though it can be employed with equal facility with windows for other purposes. It is a well known fact that in cold weather, steam generated in the interior of a room will accumulate on the inside of the glass, and the condensation will trickle down the window to the sill bar, and as there is no outlet for the same in the constructions now generally employed, the water will accumulate on and around the said sill bar. The object of the present invention is to provide a novel construction of sill bar whereby the water of condensation may readily pass from the inside to the outside. The invention comprises a sill bar, a longitudinally slotted carrier tube having one edge bent to form an outwardly projecting longitudinal lip, the tube being provided with a plurality of depressions interiorly arranged at the juncture of the tube and the lip, the tube being also provided with a plurality of spaced transverse slots which are respectively arranged in alinement with the said depressions, and a plate for clamping the carrier tube, the said plate being secured to the sill bar and provided with a series of outlet openings which communicate with the space under the plate.

H. A. Gamble, San Francisco, Cal. Tire Armor.—This invention relates to flexible armor for pneumatic tires, and particularly to armor which is composed of a plurality of metallic segments adapted to be attached to the tire and protect the same from injury. It consists broadly in the use of a plurality of armored segments preferably of metal, held together by a flexible connection common to all segments, each section making a flexible joint with the next adjacent segments, the joints between the segments being so protected as to largely prevent the introduction of mud or stones between the segments. The invention also consists in the use with armor of the character described, of a flexible endless cable which holds the segments together, the tread shoe and flexible connection being provided with clamping plates forming housings to receive the cable, said housings being corrugated to prevent any creeping movement of the segments upon the cable. In addition, the invention consists in providing a tire contacting block of yieldable material, such as rubber, on the inside of each of the segments, the yielding nature of this block in connection with the yielding tire, acting to prevent creeping of the segments around the tire, a feature quite common in constructions of this character.

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FOR SALE—Canadian patent on Automatic Copy Holder for type writing machines. For detailed description see Inventive Age of May 1911. Cole & Fortney, Kingwood, W. Va. jun

FOR SALE—Patent No. 1,014,117. Either outright or on a royalty basis. A good safety automatic railway crossing alarm, operated by rolling stock. Address, A. T. Cabeen, R. No. 1, Stuttgart, Ark. jun

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FOR SALE—Patent No. 1,008,257. Water Motor. Will sell for cash or two payments. Write for description of motor. Jose Gonzalez, No. 15 Water St. Laredo, Texas. my

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WANTED.

WANTED a Company to manufacture and market my improved patent insulator Patent No. 1,009,810, for telegraph and telephone lines. Sale of insulators unlimited. Foreign patents applied for. Address, T. H. Watkins, Wakpala, South Dakota. my

WANTED—A company to manufacture my suspended tramway, patent No. 992,672, on royalty basis. Indispensable in mercantile establishments for conveying goods. Saves labor, reduces expense, increases speed, and prevents breakage. Address, Patrick Killpatrick, Huron, S. D. my

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WASHINGTON, D. C., MAY 1, 1912.

A DECISION WHICH POINTS A MORAL.

In another portion of this issue, we have given the details concerning the decision of the Court of Appeals of the District of Columbia, reversing the action of the Commissioner of Patents and authorizing the reinstatement of an application of Hugo Mattulath for a patent on a flying machine, filed January 8, 1900. Under the practice prevailing at that time, if the applicant failed to take action within one year from the last official communication of the Patent Office, the application became abandoned. It appears that in March, 1900, the Examiner in the Patent Office, following the practice then obtaining in the Patent Office, wrote a letter to the applicant, Hugo Mattulath, reading as follows:—

> "No successful attempt has yet been made to rise from the earth's surface by means of an aerial vessel unprovided with a balloon. The results of previous experimentation indicate that even if a rising could be successfully accomplished, the vessel would be uncontrollable through inability to maintain its normal position or balance. However possible applicant's theory may be, in view of the present state of the mechanical arts and the results of previous experimentation, the step is so long from the theory to actual use, and the practicability of the apparatus is so problematical that actual demonstration of operativeness will be necessary before the grant of the patent."

When one considers the fact that this was just twelve years ago, one can hardly believe that such an official communication could emanate from the Patent Office. It proves first, that the Patent Office in its actions upon applications for patents frequently errs, and, secondly, that the march of improvement in flying machines has been very great within the period of twelve years, for today no one questions the operativeness of any flying machine.

When the applicant, Mattulath, was required to make an actual demonstration of the operativeness of his machine, it meant a complete rejection of his application, for he was poor and unable to make the necessary arrangements toward building a machine. He died on December 30, 1902, and the application became abandoned October 3, 1903.

For a score of years the Patent Office pursued the practice of rejecting all applications for patents on flying machines, or aerial vessels, which were unprovided with a balloon attachment, and the action on Mattulath's application was by no means an exception to the rule. Without knowing the exact figures, we do not doubt that there are hundreds of such abandoned applications relating to flying machines on file at the U. S. Patent Office, in which the applicants had been required to make an actual demonstration of operativeness before the grant of a patent, and not being able to do this, were forced to abandon their applications under the practice of the Patent Office.

In this case, however, others became interested in Mattulath's application because of its bearing upon the claims of the Wright Brothers. The patents of the Wright Brothers are very broad and comprehensive, and suits have been brought by them against Curtiss for infringement. In hunting around for anticipations of the patents of the Wright Brothers, the Mattulath abandoned application was developed, and the machinery of the Patent Office was set in motion to revive this application which had remained abandoned since October 1903. The decision of the Court of Appeals reviving the Mattulath application is final, and the application is now thrown open for prosecution. While there is nothing to show what Mattulath's application contains, it is understood that it embraces features identical with those used by Curtiss. It necessarily follows that if the backers of Curtiss become possessed of the Mattulath patent, they may be able to turn the tables on the Wright Brothers, for if the claims of the Wright patents are broad enough to include Curtiss, then the claims of the Mattulath application can be made broad enough to include the Wright aeroplanes. Thus, through this abandoned application of Mattulath, the Wright Brothers may themselves be placed in the attitude of infringers. It is a queer mix up, but it shows how kaleidoscopic are the changes that are sometimes developed in patent litigation.

REVIVAL OF THE AUCTION SALES OF PATENTS.

We supposed we had heard the last of this method of selling patents, but evidently the financial success of the originator of this scheme for swindling inventors was too alluring, and the AGE now has to record the advent of a new man in the field.

In the summer of 1910, a man signing himself as "F. C. Focklemann, Manager," started this scheme in a one-room office in what is known as the Jenifer Building, of this city, under the name of the "Patent Exchange." He sent out thousands of circulars, selecting, as a rule, men whose patents were several years old, assuming that if the patents were not sold, the patentees would be willing to bite at almost anything. His proposition was that the patentee should fill out a certain blank and return it with a fee of $1 for "listing" the patent. The amount was a small one, and many inventors without thinking very seriously of the matter, but willing to take almost any chance to sell their patents, sent their dollar bills to Focklemann. Because of the extensive advertising through the thousands of circulars sent out, complaints to the Patent Office, to the postal authorities, and to the chief of police became so numerous that certain officials were detailed to investigate Mr. Focklemann. As a result of the visits of the detectives, postal inspectors, and other officials to his one-room establishment, Mr. Focklemann realized that if he did not leave promptly they would work up a case against him that would land him in the penitentiary. After collecting several thousand dollars from inventors all over the country, he left Washington, and that was the end of the "Patent Exchange." It had a brief existence of less than four months, but during that time, its promoter accumulated more than the average man might have collected in several years of hard work.

With this experience as a warning, one would suppose it would be difficult to exploit this scheme again, but because the lists of inventors are constantly changing, a new concern which has started up under the name of "National Inventors Exchange," will no doubt be able to collect money just as rapidly and easily as did the erstwhile Focklemann. The circulars which have been sent out are signed "J. W. Stone, Manager," inviting inventors to attend "our next annual public auction sale of U. S. and foreign patents to be held in our Washington Office on Tuesday, April the 30th, 1912." Before the patent can be listed, the inventor is required to fill out a certain blank and return it with $2 "to partly cover the actual cost to us."

Evidently the promoter has figured out that he will go Mr. Focklemann one better. Instead of calling for $1, he proposes to make the inventors contribute one hundred per cent more. In this way he will be able to accumulate just twice the amount of money that Mr. Focklemann did in the same easy fashion. We suppose after the inventors have been bled to the extent of several thousand dollars, and complaints have become numerous, that the postal authorities, the Patent Office, and the chief of police will suppress this man just as they did Focklemann, and close his office, but there ought to be a quicker and a more effective way of dealing with such men. They ought to be stopped right at the beginning, and what is more to the point, when they are caught conducting their nefarious schemes the punishment ought to be swift and sure. Evidently J. W. Stone calculates that since Focklemann has made a goodly sum by this scheme, he too will try and see if he cannot collect several thousand dollars on an investment of a few thousand postage stamps and some cheaply printed circular letters. It is indeed unfortunate that something cannot be done to stop once and for all these fraudulent schemes, and stop them in such a way that no one would dare to start them again in the future.

We caution our readers from corresponding with this concern or sending it any money. They could do no better service than to write directly to the Postoffice Department, Washington, D. C., enclosing copies of the circulars, so that proper action may be taken to squash this latest scheme.

PROPOSED CORRESPONDENCE BUREAU FOR INVENTORS.

Among the various suggestions as to the needs of inventors and measures for their protection that come to us, is one for a publicity movement. The writer proposed a mutual correspondence society among inventors, by means of which they can exchange information as to the business methods of patent salesmen, patent attorneys, &c. The facts only need be given in the letter, without comment. In another portion of the AGE we have reprinted the correspondent's letter in full. Suppose a Philadelphia man wishes to know the standing of a Chicago firm. He asks through the columns of a newspaper, which may be open for the purpose, or through a central information bureau, if any one has had dealings with the firm. The reply gives only the precise data; what they claimed they would do; what they asked as fee in advance; what they really did or did not do; what benefit, if any, resulted from the transaction. The correspondent suggests that the INVENTIVE AGE print, from time to time, the names of inventors who would be able to answer such inquiries on receipt of a stamped, self-addressed envelope from inquirers.

The establishment of a bureau of information would be an excellent plan. An institution like this has been proposed for England, and was outlined in the edition of the AGE for March. Something of the same sort is needed in this country, and we hope that a practical scheme may be evolved that will lead to the exposure of the frauds that are a festering sore on the patent system.

Paper Cans.

The paper milk can has been with us for some time, and now comes the paper can to hold food products of various natures. The Manila paper from which the cans are made is treated with a chemical that makes it nonporous, germ proof and air tight. Experiments have been made that lead to the belief that the principal difficulties hitherto met with, by reason of the oozing or soaking of liquid contents through the paper, have been overcome. Cotton seed oil is said to percoltate even through a soldered tin can, but a paper can was poured full of it, and held it for months without seepage. It is claimed that the possibilities for making paper, cloth and other materials nonporous, are almost unlimited. Paper or cloth treated by this process is germ proof, and this new way of packing food products would eliminate the danger of ptomaine poisoning and other ills that may result from the use of metal receptacles.

Electric Boats.

For years electricity as a method of propelling large vessels has exerted fascination for inventors. Two Scotch engineers have perfected a system for achieving this ideal, and installed a plant on a vessel 50 feet in length. It comprises a 6 cylinder petrol engine, developing 45 brake-horse-power, which drives an alternating current dynamo, while the propeller is coupled to an alternating current motor, all being controlled by switch gear. The vessel has many points of interest, and experiments are being carried on to secure data as to the practicability of electricity as a propelling force for vessels of a certain size. It is claimed that this system achieves certain results impossible to be obtained in the ordinary types of steam engines. For instance the steam engine is irreversible, and the gasoline motor requires a special attachment for attaining this end, whereas with the electric system, the propeller can be switched over from full speed ahead to full speed astern, in a matter of seconds, without changing the direction of the rotation of the power generator. It is stated also that electric propulsion is more economical than any other system of driving a vessel.

New Way of Making Tubes.

The list of accidental discoveries that have proved of value to science and mechanics has recently received an addition in the perfection of the system called "extrusion," which is utilized in the manufacture of metallic objects, such as cartridge shells and tubes. In this instance the accident to which is ascribed the birth of the new industry was a miscalculation by a die maker which left the face of a punch too long. The inventor, according to *Popular Mechanics*, is a button manufacturer, and it occurred to him that if he made a slight change in his dies, the product would have a more finished appearance, without increasing the cost of manufacture. To obtain the improved shape of the face of the button, he assumed that it would only be necessary to leave a small projection on the punch. He then made a punch with the projection left a little longer than he intended, but he concluded to try it out. To his surprise, he found that instead of the slightly changed button, he had a tube about three quarters of an inch in length, with the flanged face of the button intact. He tried more blanks in this die, with the same results, and decided that the explanation was that the metal, being confined on all sides except for the annular opening formed by the opening in the die and the projection of the punch, had to go through this space when pressure was applied. A factory has been started, and the process is being worked successfully, turning out tubes and shells in large quantities. The softer the metal is, the easier it may be extruded. Lead is the easiest to extrude, and it is used to a great extent in alloys that contain small percentages of other metals, for making collapsible tubes and similar goods. Pure tin, zinc, copper and aluminum are also used.

New Wireless Apparatus.

Marconi recently sent a wireless message from Italy to Newfoundland, a distance of 4,000 miles. The feat has peculiar significance, not merely because of the distance covered, but because the ethereal vibrations which conveyed the message were sent in a desired direction, instead of radiating into space in every direction, as is usually the case with wireless messages. A new device enables Marconi to concentrate the ether waves and direct them somewhat as a searchlight directs light. Ether waves of any kind, says a writer in *The World Today*, are ordinarily sent out in every direction from the point of origin. It requires but a casual observation of the conditions to see that the intensity of the vibrations must decrease inversely as the square of the distance.

That is to say, if a certain quantity of light falls on a given surface one foot away from a source of light, only one-fourth of that quantity will fall on a surface of the same size two feet away. Anyone can roughly demonstrate this with a candle. Exactly the same thing would be true of pulsations used in transmitting wireless messages. It follows that, under ordinary conditions, the strength of the vibrations falls off at an appalling rate with increased distance from the source. It is a simple matter of multiplication to discover that a receiving station, one mile away from an electric generator that is sending out messages in all directions, will receive 19,000 times the quantity of ether waves that would be received by a station of similar dimensions one hundred miles distant. It follows that the most powerful current is presently frittered away and becomes useless, exactly as the rays of light from the most powerful source would become invisible at the distance of a few miles, were they not concentrated and sent forth in a condensed beam by the mirror of the searchlight.

Hitherto, it has been found exceedingly difficult to concentrate the electro-magnetic rays used in wireless telegraphy. If Marconi has really solved this problem, as reported, it means a long step nearer the time when wireless telegraphy may altogether take the place of the old system.

Making Earth.

Nature in her occult processes of earth production is being imitated in the geophysical laboratory of the Carnegie Institution near this city. Such work has never been undertaken before, but this is a generation of audacity, and since Professor Loeb and others have created organic life, why should not the inorganic abode of life, as well, be created? Just how the earth was made has always been a riddle. We have learned that in the beginning our sphere was, like the sun today, a mass of heated vapor. This gradually cooled, and as its temperature diminished, there came a time when the rapidly wheeling mass could no longer exist as gas or liquid. Portions at the surface began to harden and then to freeze. The crust thus formed grew thicker, and by its greater weight and greater contraction pressed more heavily upon the cooling interior. Wherever a crack or weak spot existed in the crust, the still liquid interior broke through. At first there was a fairly uniform mixture of the elements forming this mass, and certain combinations solidified to form the primal crust. When portions of the remaining liquid interior of the earth were forced through this crust, in the weak spots, these soft masses, whose composition had changed, gave, when cooled and hardened, kinds of rock different from the original crust. It was all a form of evolution about which science, as yet, knows little—hence the work in the geophysical laboratory.

It was decided to be necessary to repeat the processes of nature and therefore the laboratory reproduces as nearly as possible the enormous temperatures and pressures of the creation. Only in this way can we learn how actual rocks and minerals are made.

The imagination of the average person does not reach above a temperature sufficient to heat a metal red hot. But a red hot substance is about 1000 F., and it takes more than this to melt copper and gold. Hotter still must be the furnaces in which glass is made or iron melted, yet rocks are found out of which are made the utensils in which these metals seethe in liquid form. Platinum, long regarded as the metal requiring the highest heat for melting, is handled in quicklime vessels. Asbestos, commonly considered fireproof, will liquefy at the great heats at which certain minerals remain solid. There is iridium, which it takes 5000 degrees F. to affect. Osmium takes a still higher temperature. But even at this tremendous height there are minerals which remain stubbornly solid. Among these are lime, magnesia, alumina and zircon. To melt these the electric furnace is required, and a heat of 6000 degrees. But if this were doubled, it would still not equal the temperature which the earth must have reached at one period, and which the sun has today.

Rocks and minerals are being actually reproduced in the laboratory. Their chemically pure elements are first made, and the forces playing a part in their fomation are studied. Then the manner in which they combine is investigated. Apparatus exerting the huge pressures of nature is also installed in the workshop. Volcanic action is reproduced on a small scale, and a study made of the changes produced in the rocks by the action of volcanic steam. The reproduction of precious stones is another problem closely related to those described. The laboratory is not trying to make diamonds, but in the course of its work it is likely that some light will be thrown upon the puzzling problem of how diamonds came to be formed in the earth, and why they are not more common. It may also in time be able to answer the question as to why the same ingredients are sometimes crystallized to form one kind of gem, and sometimes another. Already a method of making quartz glass in quantities has been evolved. To produce more than small amounts of this glass—which is obtained by melting pure rock crystal—was never possible before. The old processes were tedious. Single crystals of quartz had to be melted in the electric arc, and afterwards pieced together under the same heat. But it was found in the laboratory that the quartz could be melted in an electric furnace so constructed that a pressure of at least 500 pounds to the square inch could be exerted upon the mass while it was melting.

One of the properties that make quartz glass especially useful is its high softening temperature. It can be heated to 2000 degrees F. without noticeably softening. In other words, it is possible to melt and even distil gold, copper or silver in a quartz glass vessel without harming it. By the aid of the quartz lenses, astronomers can extend their observations of the spectra of distant stars, and learn more of the elements of these bodies. It is also useful in the treatment of disease by ultra violet rays, as the power of the apparatus can be increased by the use of quartz.

Metals Forced into Glass.

By means of an electrical process certain metals, such as lead, tin, copper, silver and iron, have been forced into glass. A small tube of potash-glass, closed at the bottom, is filled with a mixture of sodium and potassium nitrates, and then immersed in a fused salt of the metal that it is desired to introduce. Electric current is applied, the mixture within the tube forming the negative pole and the metallic salt outside the positive pole, and the current entering through platinum wires. The metals penetrate the glass in a jelly form, giving colors varying with conditions. and on heating change to the metallic state, or to oxides.

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Die stock, Ratchet.....L. H. Louis
Disinfecting apparatus.....F. R. Bensinger
Display apparatus.....E. M. Dougherty
Distributing machine.....N. Meronek
Door and pedal operating mechanism.....
.....G. P. Brand et al.
Door catch F. J. Lee
Door fastener, Sliding.....J. M. Hopkins
Door, Metallic.....J. I. Lempera
Dough divider.....T. Masel
Draft attachment.....J. F. Holtzen
Drawing instrument.....J. Dzierwa
Drawing instrument.....T. H. McAnelly
Dress or shirt shield, Inflatable.....
.....F. P. Baker
Drills, &c., Hand ratchet for.....
.....C. J. Scholler
Drilling bolts and other work, Machine for.
.....E. W. Fishburue
Drinking device, Sanitary....J. B. Howell
Dust bins, Tilting apparatus for emptying portable.....A. Wodarra
Dye, Green triphenylmethane.....
.....A. Hausdorfer et al.
Dye, Triphenylmethane
.....A. Hausdorfer et al.
Dye, Yellow-green triphenylmethane.....
.....A. Hausdorfer et al.
Electric call system....J. W. Wilson et al.
Electric cut out.....T. E. Murray
Electric device, Magneto...H. N. Motsinger
Electric drier.....T. B. Ray et al.
Electric furnace.....A. E. Greene
Electric heater.....H. P. Ball
Electric Induction furnace.....J. H. Reid
Electric switch.....E. T. Lockard
Electrical connector.....J. C. Royce
Electrical distribution systems, Instrument set for.....V. G. Apple
Elevating, transporting and discharging material, Apparatus for.....E. B. Miller
Elevator.....F. Widmann et al.
Elevator emergency brake....P. C. Slowe
Elevator guide lubricator.....J. H. Hirz
Elevator shaft fire doors.....
.....J. E. and T. F. Donnelly
Engine igniting apparatns, Gas.....
.....E. Thomson
Engine igniting mechanism, Explosive.....
.....A. Winton, et al.
Engine starter.....G. S. Sutliff
Engine starting mechanism, Hydrocarbon..
.....F. Dettman
Engines, Hydrocarbon vaporizer for internal combustion.....J. W. Mowbray
Engines, Vaporizer for internal combustion.
.....E. Thomson
Evaporating apparatus having multiple evaporation.....W. Rusiecke
Excavator bucket clean out..H. J. Bentson
Excavator wheel.....A. Roberts
Expansion joint.....W. Wright et al.
Explosion engine.....G. F. Mort
Eyes, Device for removing foreign matter from the.....W. A. Jones
Fabric having layers of variable extensibility.....L. A. Subers
Fabrics, Manufacture of textile.....
.....J. Wilkinson
Fan, Automatic.....W. B. Laskey
Feed bag.....J. Holitzki
Feeder, Automatic.....T. M. Platt
Fence post, Metallic.....J. Huber
Fence repairing implement.....M. F. Mead
Fiber-bearing and other plants, Apparatus for treatment of.....G. W. Schlichten
Filing cabinet.....L. S. Weaver et al.
Filing case.....W. T. Callaghan
Filing loose leaves, Arrangement for.....
.....A. Krantheim
Filter.....J. N. Sisley
Filtering apparatus.....B. Jozsef
Fire alarm, Automatic.....S. M. Kohr
Fire escape.....M. Rodrignez y Fonoll
Fire escape.....T. H. Elliott
Fire, range and the like, Domestic.....
.....G. R. Hislop
Firearm.....C. A. T. Sjogren
Firearm.....C. H. A. F. L. Ross
Firearms, Silencer for.....R. A. Moore
Fishing pole, Automatic.....A. A. Green
Flame gage.....V. W. Thompson
Float (Reissue).....A. W. Ayling et al.
Floor oiler.....L. G. Schaeneman
Floor opening closure.....R. J. Kittredge
Floor scraping machine....C. T. Woodruff
Floor scrubbing and polishing apparatus..
.....F. A. McKay
Flush tank operating device (Reissue).....
.....B. O. Tilden
Flying machine.....M. H. Whalen
Form, Dress.....J. J. McHattie et al.
Fruit picking tool.....H. P. Guy
Fruit protector.....A. G. McAdie
Frying pan attachment.....H. Osborn
Fumigating apparatus.....
.....J. W. and C. A. Scott
Furnace.....P. J. Gordon et al.
Furnace.....J. D. Swindell
Furnace charging apparatus, Blast.....
.....J. Kennedy
Fuse case.....T. E. Murray
Fusible link device.....W. Poppendieck
Gage.....E. McCoy
Game apparatns or puzzle.....S. Miller
Gas controller and safety valve.....
.....F. S. Drummond
Gas generator, Acetylene.....F. R. Hndson
Gas generator, Acetylene....W. W. Lewis
Gas purifier.....W. C. Butterworth
Gas retort charging and discharging apparatns.....T. Rodman et al.
Gate.....P. Lingwall
Gearing.....O. C. Beach et al.
Gearing.....G. O. Leopold
Gearing, Reversing.....E. M. Wheelock
Glass articles, Making blown....A. Kadow
Glass drums and other hollow bodies, Process and apparatus for the manufactnre of.....R. Hoffmann
Glove.....P. P. Reisenhus et al.
Glove, Working.....J. Chnrchill
Go cart.....M. J. Foyer et al.
Grading machine.....E. C. Jewett
Grain drill.....W. S. R. Thrush
Grain drill.....D. A. Schutt
Grain to elongated or filament form, Reducing ground.....H. D. Perky
Grass hook, corn knife, and pruning saw, Combined.....A. A. Bates
Grate.....J. C. Quinn
Grease to rolls, Device for applying.....
.....P. A. McGowan
Grinding mill.....J. B. Hoop
Guns, Breech mechanism for automatic recoil-operated.....R. J. W. Brown
Guns, Safety appliance for hammers.....
.....L. G. Sagabiel
Hand bag, Sewed.....E. Becker
Handle.....J. W. Dailey
Handling loose materials, Machine for.....
.....G. W. Jackson
Harrow, Disk.....G. W. Willis
Harvester attachment.....D. S. Cantine
Hat fastener.....J. Payer
Hat guard.....C. E. Waterworth
Hay handling appliauce.....W. A. Bailey
Hay loader and rake, Combined.....
.....E. J. Williams
Head shaping machine...C. Glover et al.
Headlight, Automobile.....A. Stepanek
Headlight controller.....F. E. Thompson
Heat accumulator for low pressure fluid..
.....F. Samuelson
Heat insulating vessel.....R. Machlett
Heating boiler, Hot water.....
.....T. D. MacGregor
Heating systems, Automatic controlling apparatus for steam....F. F. Coggin et al.
Heel attachment, Shoe.....J. A. Enright
Heel, Resilient.....H. H. Mathis
Hinge for windows, Detachable.....
.....M. A. George
Hoisting apparatus.....H. C. Warnitz
Hoisting apparatus.....J. S. Ewert
Hoisting gear.....H. Windhoff
Hoisting machine.....J. C. Fogarty
Hoops, Apparatus for manufacturing metalie.....C. L. Brehier
Horse releasing device.....R. E. Barrett
Hose coupling.....A. Boyer
Hub for vehicle wheels, Pnenmatic.....
.....T. Duysens
Hub, Wagon.....E. A. Krider
Hnb, Wheel.....F. W. J. Goerseh
Hub, Wheel.....W. T. Pnrsglove
Hydraulic press feeding mechanism.....
.....W. P. Bettendorf
Hydrocarbon burner.....J. R. Green
Ice sawing machine.....J. J. Kopetka
Igniting device.....J. B. Gould
Impulse transmitter.....E. Neuhold
Ink from cloths, Apparatus for the recovery of oily.....M. S. Hopkins
Ink from cloths, Recovery of oily.....
.....M. S. Hopkins
Insert holding device.....A. H. Reid
Insole for shoes.....D. Austin
Insulating rosette for electric light fixtures.
.....N. Lang
Insulator.....W. R. Markley
Ironing table.....A. Williams
Jewelry A. Segman
Journal bearing wedge.....R. E. Frame
Kite.....E. E. Thayer
Knitted collar for garments.....
.....G. O. Sanborn
Knitting machine.....R. Hutchinson
Lacing for leather belting, Machine for making coiled eyelet.....
.....I. C. Simmons et al.
Ladder.....L. F. Reichardt
Ladder and bench, Combination step.....
.....C. Goetter
Lamp.....J. Forsheim
Lamp, Bichromatic.....J. H. Fry
Lamp, Miner's.....I. Bertha
Lamp socket, Electric.....C. G. Knauff
Lamp sockets, Cap lining fastener for electric.....E. H. Freeman
Lamps, Mantle burner for kerosene.....
.....H. E. Rider
Lasting machine.....A. Bates
Latch.....W. Moege
Latch, Rim.....G. N. Mason
Laundrying machine.....W. J. Zuill
Leaf turner.....B. M. Andrews
Leather and preparing it, Glove.....
.....E. Simon
Leather board stock, Prodnction of.....
.....A. L. Clapp
Leather brnshing and cleaning machine....
.....W. R. Smith
Leg pulling apparatus.....L. J. Le Jeune
Lens.....G. A. H. Kellner
Lens objective, Quadruple.....P. Rudolph
Life saving net.....M. Unger
Lifting jack.....C. Dunlap
Light shade bracket.....W. H. Stratton
Loading device.....G. E. Menke
Loading trap, Portable.....B. Ransome
Loads, Machinery for engaging and carrying.....J. Nameche
Lock.....E. Hahn
Locking clamp.....L. C. Tingley
Locomotive.....T. R. Dawson
Locomotive ash pan.....J. F. Dunn
Looms, Pick finder device for.....
.....S. S. Jackson
Lowering device.....K. Szentivanyi
Lubricating apparatus, Intermittent grip device for.....C. Pottel
Lubricating device.....E. T. McKaig
Mail bag catching and delivering apparatus.
.....E. R. Simpson
Mail box and signaling mechanism, Combination.....S. S. Hopkins
Mail box signal.....M. F. Welch
Mail carrier.....M. T. Miller
Match box.....F. C. Holkum
Match holder.....F. C. Sparks
Measuring the viscosity of liquids, Apparatus for.....A. Baldns
Meat chopper.....W. W. Mitchell
Meat stamping or marking device.....
.....W. T. Conway
Mechanical movement..E. A. Dewald et al.
Medicinal tablet.....A. Horowitz
Mercury meter, Three wire..R. C. Lamphier
Metal bar handling apparatus.....
.....F. H. Daniels et al.
Metal bending press.....C. L. Huston
Metallic tie and rail fastener..J. Jendral
Meter record.....M. H. Kane
Micrometer gage.....M. A. Smith
Milking machine.....K. W. Johansson
Milking machine....L. D. De Laney et al.
Milling machine.....C. F. Shanks
Mine prop.....O. Grunewald et al.
Mine protection system.....J. McGavin
Mine, Submarine contact.....F. Bruck
Mirror, Mouth.....H. R. Smith
Mixing machine.....J. D. Clough
Moistening device, Envelop..S. Karemareyk
Mold coating.....C. H. Haslett et al.
Molds and mold cores, Apparatus for forming (2 pats.).....J. F. Bryant
Molding machine.....M. Sehclecki et al.
Motor.....P. L. T. Heroult
Motor.....J. F. Thomas
Mounted roller, Adjustable.....
.....T. W. Doolittle et al.
Mowing machine elevating and bnnching attachment.....R. Walker
Muffler.....H. H. Larkius
Music box, Adjustable.....R. W. Pain
Music, Machine for making perforated....
.....E. W. Myers
Music sheets, Machine for making perforated.....G. B. Kelly
Neektie press.....M. Jonas
Nut lock.....J. Niewohner
Nut, Lock.....L. S. Brach
Nut locking deviee.....J. Steele
Nut rotating deviee.....W. C. Caswell
Oar lock.....C. L. Keddy
Oil can.....J. E. Bethancourt
Oil switch.....C. C. Badeau
Ore, Apparatus for treatment of.....
.....J. Gross et al.
Ore roasting and sintering apparatus.....
.....A. S. Dwight
Organ swell.....R. Hope-Jones
Oxid, Manufacturing pnre nitric.....
.....R. M. von Berneck et al.
Package tie.....H. M. Cake
Packing for elastic fluid turbines.....
.....J. Wilkinson
Packing, Piston rod and valve stem.....
.....W. D. Kesselring
Pad machine.....A. C. Peterson
Padlock, Permutation.....C. J. Evans
Paper box making machine...E. Jagenberg
Paper holder.....A. Lesperance
Paper machinery.....C. H. Hornbrook
Paper rack and display device.....
.....C. J. Bryant
Paper remover, Wall.....J. H. Foster
Partition, Expansible.....L. P. J. Farrell
Pass case, Pocket.....E. C. Harrington
Paste used as weavers' glue or for other similar dressing purposes, Preparing.....
.....P. Reimann
Pastry machines, Drip remover for.....
.....A. S. Cairncross
Pen, Fountain.....F. M. Ashley
Pen, Self-filling.....J. Hendrie
Pencil.....H. Reiche
Pencil.....A. W. Harrison
Peucil and compasses, Combined.....
.....P. D. Morgan
Pencil casing.....C. S. Bush
Permutation lock.....V. Mattivi
Permutation lock.....T. H. Hart
Photographic plate developing, washing, and fixing apparatus.....A. Benko
Piano case attachment.....J. W. Hurst
Piano, Pneumatic.....W. G. Betz
Picture apparatus, Animated..H. N. Marvin
Picture machine, Film winding mechanism for moving.....J. B. Merkel et al.
Pipe connection.....W. Schulz
Pipe coupling.....F. E. Reusher
Pipe coupliug.....D. W. Ross
Pipe coupling, Automatic train.....
.....A. M. Porter
Pipe or tube bending machine (2 pats.)...
.....J. F. Cox
Pipe snpport.....A. H. Lyon
Pipe wrench.....I. M. Edmundson
Pipe wrench, Chain.....J. J. Donohue
Piston, Gas engine.....F. De Fazi
Plane.....T. A. Manley
Plane, Beveliug.....A. L. Savage
Planter.....P. Offill et al.
Planter, Corn.....E. M. Heylman
Planter, Seed.....J. Y. Atmar
Plants, Parasiticide for.....G. Grether
Pliers.....G. R. Mesnard
Plow.....I. A. Weaver
Plow.....T. Van Egeren
Plow, Ditching.....T. F. Bruening
Plow row gage attachment...R. J. Vibbert
Plng, Separable attachment....H. Hnbbell
Pocket, Safety watch.....H. A. Woolslare
Poison distribnting apparatus.....
.....L. V. Rosser
Pop cooler.....J. H. Garey
Post driver.....B. L. Willis
Pots and pans, Supplemental bottom for..
.....F. Chaloud, Jr.
Potato digger.....S. J. Fritz
Pouring pot.....W. P. Tarrant
Power apparatus.....L. E. Fish
Power transmission device....D. K. Wilson
Power transmission mechanism.....
.....G. A. Morgan
Pressing pasty masses, more particularly mixtures of asbestos and cement Machine for F. Hloch
Pressure regulator.....M. V. Smith
Printing machine.....M. A. Lathey
Printing press.....F. B. La Barr
Printing press numbering attachment.....
.....C. W. Kuen
Protector or goggles.....J. W. Leasure
Pump, Air.....H. J. Hawthorne et al.
Pump fitting.....J. Hahn
Pump operating mechanism....P. G. Anlt
Pumps or coils, Air chambered stuffing-box for spiral G. Bramanti-Mattei et al.
Pumping apparatus, Liquid.....
.....H. M. and T. M. Chance
Pumping liquids..H. M. and T. M. Chance
Pumping liquids.....T. M. Chance
Push button, Indicating.....W. R. Schlage
Push wheel.....W. Plummer
Puzzle.....C. C. Vessels
Radiator.....T. D. Robinson
Rail brace and lock, Independent.....
.....R. H. Sanders
Rail brake.....J. C. Dale
Rail chair and joint.....C. E. Doty
Rail construction, Shifting.....L. E. Nutt
Rail crossover.....H. D. Cummins
Rail joint.....G. P. Enstin
Rail joint.....M. A. Stripe
Rail joint.....J. P. Dnllum
Rail joint.....J. W. Kennedy
Rail joint.....E. Savoy
Rail joint fastener.....J. E. Foote
Rail locking device, Point....V. H. Nulle
Railway cross tie and snpporting plate..
.....J. Gorman
Railway rail joint.....C. P. Lancaster
Railway rails, Anticreeper for (2 pats.)...
.....D. F. and D. L. Vanghan
Railway rails, Anticreeper for.....
.....D. L. Vaughan
Railway sleepers, Portable machine for regrooving A. Collet
Railway spike.....E. J. Dittmer
Railway switch.....L. C. P. Taenchen
Railway switch controller....P. D. Hibner
Railway switches and signal devices, System of operating.....P. D. Hibner
Railway tie.....M. G. Challbnrg
Railway tie and lock.....V. A. Conklin
Railway tie, chair, and fish plates.....
.....W. D. Carpenter et al.
Railway tie, Metallis.....S. Shoemaker
Railway tracks, Apparatus for blowing sand from.....C. D. Brown
Rake cleaning attachment, Hand.....
.....W. E. Holderman
Razor, Safety.....R. Rnbens
Receptacle for containing and discharging semisolid and pasty substances (2 pats.)
.....J. F. Craven
Reel.....A. J. Isham
Refrigerator, Mortuary.....J. N. McIntire
Register.....O. P. Vroom
Regulator.....F. E. Ricketts
Resilient wheel.....R. E. Arnold et al.
Resilient wheel.....C. D. Galvin
Resistance.....R. Miller, Jr.

Rheostat, Automatic motor-starting.....P. Zimmer
Rolling or reducing mill....W. R. Reeves
Rolling shapes, Apparatus for.....G. G. McMurtry
Rotary engine with piston of variable area.....S. J. Johnson
Roving machine.....W. C. Peirce
Rule, Slide.....G. W. Richardson
Sad iron.....G. E. Wait
Sad iron, Gas heating.....L. Wentes
Safe lock, Auxiliary..A. E. Anakin et al.
Sand washing apparatus.....L. M. Speer
Sancepan-cover.....W. Noakes
Saw.....H. B. Nichols
Saw-filing machine.....J. Arnesen
Saw swage.....A. E. White
Scraper, Wheeled.....W. M. Gentle et al
Seal, Car.....E. G. Gebauer
Seal lock for boxes.....J. Sehrt
Sedan.....D. P. Kelso
Separating mechanism..F. H. Mason et al.
Serving table.....T. E. Davis
Sewing machine attachment....D. Gattone
Sewing machine brake mechanism.....J. L. Kleinman
Sewing machine, Buttonhole....J. Kiewicz
Sewing machine pull-off.....A. Boyd
Sewing machine thread cutting device.....R. L. Lyons
Shade and curtain holder.....C. F. Haase
Shaft support.....J. B. Kloeker
Shelf, Adjustable.....M. H. Smith
Shelving, Collapsible.....V. Willoughby
Ships and boats, Hull and superstructure of.....E. Antoniades
Ships from harnacles, Protecting.....G. Delius et al.
Shock mover.....P. Voellinger
Shoe, Athletic.....C. E. Simpson
Shoe brushing and scraping device.....C. S. Williams
Shoe shank and filler, Combined.....W. H. Wood
Shovel dipper tooth, Steam.....J. Clark
Shuttle brake.....J. Laforet
Signaling system, Selective.....E. R. Gill
Silo.....J. R. Graft
Single phase motor..E. F. W. Alexanderson
Skate, Roller.....E. C Kohler
Skate, Roller.....O W Everett
Skates, Roll for roller.....O. W. Everett
Slaughtering device, Animal.....H. B. Hoeckelberg
Sleeper.....G. Dorffel
Smelting sulfid ores.....A. Haggenmiller
Snap switch, Rotary.....C. D. Platt
Soap press.....B. H. Becker et al.
Soldering iron.....N. I. Dryfoos
Spectacles, Eye shield.....F. Wilson, et al
Speed indicator, Ship.....L. J. Heathcote
Speed mechanism, Variable.....W. F. Zimmermann
Speedometer.....L. E. Blanchard
Spigot.....G. A. Lowry
Spinning machine..E. J. and J. J. Cotter
Spring roller.....A. M. MacFarland
Spring wheel.....J. C. and I. L. Deckard
Sprinkler head.....F. E. Opitz et al
Sprinkling apparatus.....G. D. Parker
Stamp affixer.....B. D. Straight
Stamp canceling machine.....F. Kester
Stanchion.....W. P. Dawson
Staple.....W. E. Dean
Steering and propelling device, Boat.....J. E Haschke
Steering device for motor boats.....N. Roe
Stool, Milking.....N. Reiter
Stovepipe joint.....W. D. Fitzpatrick
Stoves, Valve guard for.....M. A. Krug
Strainer, Garbage.....H. E. Horner
Straw dispenser.....H. L. Reach
Strength testing apparatus.....J. O. Stanley et al.
Stretching frame.....F. R. Miller
Structural material, Manufacture of.....C. E. Duncan et al.
Sugar, Refining.....H. Wiese
Swab.....C. M. Heeter
Sweeper.....J. P. O'Connell
Swing.....J. H. Frey
Switch.....C. H. Dimock
Switch-box, Waterproof.....R. R. Miller
Switch mechanism, Quick breaking electric.....T. W. Thomas
Switch socket.....R. B. Benjamin
Swivel.....J. Sharp
Syringe, Hypodermic.....J. T. Greeley
Tack pulling machine.....J. B. Hadaway
Talking machines, Automatic cut off for...J. W. Nelson
Tapping attachment.....R. S. Blake
Telegraphy, Space.....S. Cabot
Telemeter, Coincidence.....O. Eppenstein
Telephone exchanges, Apparatus for metering conversations in automatic....G. Grabe
Telephone system.....S. L. Van Akin, Jr.
Telephone use, Portable face-mask for....L. C. Stockton
Telephonic and telegraphic system, Combined.....R. E. Gill
Terminal structure.....C. W. Davis
Thread cutting dies.....M. H. Lukens
Tie plate claws, Pointing.....T. V. Handloser et al.
Tile, Facing.....F. C. Gideon
Time-switch J. Thompson
Tire bolt wrench.....C. E. Oatman
Tire chain mechanism.....C. Peterson
Tire, Pneumatic.....J. McGinnis
Tire, Resilient.....C. Friederich
Tire tread, Pneumatic.....F. G. Ward
Tire, Vehicle.....C. A. Schenkel
Tire, Vehicle.....W. A. Giermann
Tire, Vehicle.....B. C. Swinehart
Tire, Vehicle wheel.....L. G. Fleming
Tire, Vehicle wheel.....T. J. Mell
Tire, Vehicle wheel.....B. C. Swinehart
Toaster, Electric.....A. S. Cubitt
Tobacco bed steaming apparatus.....J. H. L. Johnson
Tobacco beds, Steaming..J. H. L. Johnson
Tobacco pipe.....J. Bachmann
Tongs, Clinker.....J. G. Althouse
Tool, Electrically heated.....J. S. Hansen
Tool handle.....J. C. F. Johnson et al.
Tooth crown fastening Artificial.....J. W. Ivory
Toy kinematograph.....O. Messter
Trace coupling.....W. R. Lucy
Tracker bar operating mechanism.....F. W. Bull
Train controlling device, Automatic.....H. L. Rider
Train order catching device....F. J. Rolfe
Transformer.....M. O. Troy
Transom lifter, &.....A. Fromhold
Tree and shrub protector....J. J. Carstens
Tree prop.....E. Worthington
Trolley harp.....O. W. Smith
Trolley poles for electric traction systems..E. M. Munro
Trolley wires, Means for removing ice from.....J. A. Sloan
Trowel, Surfacing.....J. B. Runner
Truck construction, Car..J. W. Bettendorf
Truck for disk harrows, Transportation..E. M. Heylman
Truck handle clamp.....J. W. Butcher, Jr.
Truck mechanism.....F. C Warne
Truck side frame.....J M. Ames
Trunk, Wardrobe.....H. W. Rountree
Tubing, Flexible metallic.....W. Berryman et al.
Tubular handle.....J. A. Simons
Turbine blading.....C. A. Parsons et al.
Turbine controller mechanism.....W. H. Weicker
Turbine controller mechanism.....J. Wilkinson
Turbine, Elastic fluid.....S. J. Pigott
Turbine, Elastic fluid.....J. Wilkinson
Turbine governing means, Elastic fluid.....R. H. Rice
Turbine, Hydrocarbon gas.....I. N. Reed
Turbine, Steam.....W. J. A. London
Turbines, Automatic regulation of mixed pressure.....E. W. Mix
Turbo generator.....R. H. Rice
Typewriter escapement.....L. P. Diss
Typewriter escapement mechanisms, Holder for.....A. Stieg
Typewriter key lock.....M. Pfau
Typewriting machine.....J. A. Whitcomb
Typewriting machine....A. G. F. Kurowski
Typewriting machine....J. C. McLaughlin
Typewriting machine.....C. E. Smith
Typewriting machine.....R. W. Uhlig
Typewriting machine (3 pats.).....J. Waldheim
Typewriting machine.....O. Woodward
Typewriting machine.....J. Felbel
Typewriting machine tabulating mechanism.....G. C. Hoskins
Umbrella and parasol.....F. P. Anello
Uncoupling device.....W. Kelso
Underframe.....V. M. Summa
Underframe.....J. M. Rohlfing
Vacuum cleaner.....J. J. Duffie
Vacuum service inlets, Closure for.....F. J. Matchette
Valance.....R. C. Schemmel
Valve.....C. G. Eshelman
Valve, Closet tank.....H. N. Libbey
Valve, Engine.....R. Wintzer
Valve for corrosive liquids..J. F. Jennings
Valve for turbines, Throttle....R. H. Rice
Valve for water distribution....T. C. Cooke
Valve head gate.....W. F. Garbe
Valve mechanism, Turbine....J. Wilkinson
Valve, Pressure reducing.....E. J. Best
Valves, Fender for gas stove.....C. Zadig et al.
Vault, Cement.....F. S. Nixon
Vehicle driving and braking means.....A. S. Krotz
Vehicle fender.....E. M. Thompson
Vehicle fender.....A. Sagramoso
Vehicle frame, Motor.....P. Evans
Vehicle, Motor.....H. P. Maxim
Vehicle sleigh attachment.....C. E. Huber
Vehicle wheel.....L. L. Gregg, Jr.
Vehicle wheel.....E. A. Glenn
Vehicles, Spring suspension for road.....L. Harris
Vending machine, Coin controlled.....C. C. Clawson
Vending machine, Coin or check controlled.....W. J. Morse
Wagon attachment, Log....J. H. Anthony
Waist.....I. Lekowitz
Walking attachment, Pneumatic.....M. W. Freeman
Water cooler.....W. Hepfinger
Water tubes to water tube boiler and other drums, Means for attaching.....W. D. McNaull
Waters, Manufacturing mineral...J. Bienz
Wave energy motor.....D. K. Bryson
Weather strip.....A. M. Lane
Weather strip, Metal.....A. M. Lane
Weighing machine.....J. M Chappel
Weight motor.....S. W. Gilliland
Welding, Electric.....L. S. Lachman
Welding machine, Electric.....A. C. Taylor
Welding metals.....A. Lucas
Wheat, Treatment of germ of.....J. Wallis
Wheel.....C. E. Martin et al.
Wheel.....G. H. Metcalf
Wheel mud guard, Vehicle....C. H. Nichols
Whiffletree hook.....C. E. Jones
Windmill.....J. H. Baxter
Windmill.....B. F. Swift
Window, &c.....J. B. Strauss
Window frame.....A. M. Deutschmann
Window lock.....E. Suhsmann
Window ventilator.....J. W. Downs
Wire stretcher.....W. A. Medlin
Wire stretcher.....J. Fisher
Wire stretcher.....C. W. Schumann
Wood, Vulcanized.....C. Howard
Wrench.....A. Shirk
Wrench F. Machava
Xylophone.....H. Welch
Yeast, Increasing the raising power of dried.....P. D. H. Ohlhaver
Yoke fastener, Neck.....G. W. Hurst

Issued April 2, 1912.

MECHANICAL PATENTS.

Account register.....A. F. Staples
Acid and making same, Ammino-oxy-naphthalene sulfonic.....H. Bucherer
Aerial navigation, Power driven machine for.....V. F. Carpenter
Aeroplane H. Farrell
Aeroplane (Reissue).....J. W. Way
Air gage.....J. A. Buttress
Airship.....V. C. de Yharrondo
Ampoule.....F. R. Eldred
Animal trap.....C. E. Walcott
Armor.....A. M. Schneider
Atomizing apparatus.....W. J. Smart
Automobile brake and jack.....P. Janek
Automobile fender.....J. P. Randerson
Automobile primer.....W. R. Dunkel
Automobile radiators, &c., Flag holder attachment for.....O. S. Fitzsimmons
Automobile starter.....C. D. Jenney
Automobile steering wheels, Means for heating.....G. E. Smith
Automobiles, Oil indicator for.....J. E. Campbell
Bailing press.....J. D. McKenzie
Baling press (2 pats.).....M. C. Nixon
Bath apparatus.....G. G. Wiggins
Battery conductor or support, Storage.....W. Morrison
Bearing, Antifriction.....C. Upton
Bed and divan, Convertible..W. Thompson
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Bed or couch fabric.....W. J. Grotenhuis
Bed spring fabric...G. Gangelhoff Jr. et al.
Belting, Canvas.....J. B. Hay
Billiard cue.....W. Blaney
Boiler.....J. T. Brown
Boiler cleaner.....E. S. Cline
Bolt anchor, Expansion....H. W. Pleister
Book protecting device.....B. M. Fletcher
Book rack.....E. Oldenbusch
Books and pads, Manufacture of manifold writing.....F. Heitzmann
Bookbinding.....H. N. Yerger
Boot or shoe.....M. Brihaye
Boot or shoe calk.....J. B. Murphy
Bottle closure.....J. Matus
Bottle holder, Milk.....J. I. Bantom
Bottle, jar, and the like and stopper therefor.....D. Hurst et al.
Bottle rinsing machine.....K. Kiefer
Bottle washer.....H. Krause
Bowling alley.....F. C. Hobbs
Box blank, Folding.....E. W. Labombarde
Box fastener.....R. Schleicher
Brake.....G. S. Wilson et al.
Brake head.....H. B. Robischung
Brake mechanism.....P. S. Moe
Branding head, Electrically heated.....E. N. Chandler
Branding machine.....C. R. Fischer et al.
Brick machine.....H. S. C. Walker
Brooder, Chicken.....W. O. Witham
Brush, Rotary tooth.....J. Horn
Bucket, Dinner.....E. Koretz
Bucket support, Paint.....G. Stahr
Buffing machine.....E. R. Douglas
Cable hanger.....J. Davis
Calculating machine.....F. Trinks
Can opener.....T. H. Russell
Can spout.....C. F. Kellom
Canning acid fruits or vegetables.....R. M. Glacken
Candle holder.....H. C. Deckert
Cane mill, Sugar.....W. J. Dyer et al.
Cane stripper.....J. W. Jackson
Canopy.....T. Jackson
Cap.....J. S. Pethybridge
Cap crimping die.....R. V. Craggs
Car coupling.....W. S. Schroeder
Car coupling uncoupling device.....H. C. Buhoup
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Car, Dump.....H. S. Hart
Car fender.....F. W. Wells
Car roof construction..J. J. Kelleher et al.
Car stake.....W. J. Moloney
Car stake and bunk, Combined.....W. Houghton
Car starter.....C. X. Johnson
Car underframe.....J. H. Weisbrod
Car underframe, Cast steel..C. H. Howard
Cars, Controlling system for motor traction.....W. C. Mayo
Cars, Steel underframe for box.....V. M. Summa
Carbureter.....J. Namur
Carbureters, Float valve for...M. Weiwoda
Card business system.....L. S. Antisdel
Carpet sweeper attachment.....A. K. Brettelle
Carrier.....R. W. Franklin
Carrier system, Gravity....W. H. Bickford
Carriers, Automatic loader for lift.....C. H. Lister
Cartridges, Cap and fuse holder for dynamite.....W. B. Kellogg
Cash register.....J. F. Parker
Cash register, Total printing..F. L. Fuller
Caster.....E. W. Bassick
Caster device, Leg lifting.....A. Grnb
Catalysts, Regenerating consumed M. Wilbnschewitsch
Catnip ball (2 pats.).....W. E. Smith
Ceil case interlocker..A. W. D. Weis et al.
Cement pipes, Machine for making.....F. Weinberg et al.
Chain, Sprocket.....J. L. Lee
Chair (Reissue).....A. Wanner, Jr.
Chairs, Sanitary tray for.....C. J. Snideman et al.
Cheese cutting machine.....F. Decker
Chicory root, Treating.....R. Porath
Chimneys having open fireplaces, Adjustable form for smoking chamber construction for.....L. Jack
Chuck.....D. Weir
Churn.....W. D. D. Bowen
Cider mill.....R. T. Wilson
Cigar case.....A. Schwieger
Cistern or catch basin cleaner...J. H. Wiest
Cistern, Sanitary.....J. A. Leighton
Clamping device.....J. A. Johnson
Clayware drier.....H. Huess
Cleaning apparatus.....I. H. Spencer
Clevis.....O. M. Bye
Clevis, Safety.....J. Miron
Clipper.....W. H. Nicholls
Clock.....H. J. Treganza
Closet.....L. H. Crow
Clothes drier.....E. T. Ferry
Clutch, Friction.....H. Drnschel
Coal pocket.....P. C. Blaisdell
Cock, Automatic slide lever cylinder.....A. V. Pollmiller
Cock, Multiple.....P. Mueller
Collar supporter.....E. Caspary
Coloring matter, Azo (2 pats.)..A. Zart
Combination lock.....J. Schechter
Concentrator.....A. R. Wilfley
Concrete piers, walls, and the like, Apparatus for constructing.....S. L. Shaffer
Condenser, Steam.....F. Hauswirth
Conveyer.....A. G. and C. A. Kline
Conveyer.....F. Fissthaler
Conveying apparatus.....J. H. Gilman
Conveying trough.....H. Roth
Cooker, Coffee.....J. N. Shaw
Cooking utensil.....M. A. Hayes
Cooking utensil.....F. Kneifel et al.
Copper ores, Treating.....R. Gahl
Core box clamping machine.....P. B. Harrison et al.
Corset.....C. E. Woodworth
Cotton gin.....F. Phelps
Cotton or drag sack protector..T. M. Elkins
Cotton picking and cleaning machine.....B. Johnson
Coupling.....P. J. Gaffney
Coupling lock.....E. E. Gold
Coupling release rigging....H. C. Buhoup
Coupling or union.....W. I. Twombly
Coverings, Apparatus for constructing.....W. M. Janpole
Creel.....S. W. Wardwell
Cross bearer.....J. M. Ames
Cross joint between flat iron bars.....G. Czimeg
Cue tip, Detachable.....A. Benhoff
Cultivator.....E. B. Builta
Cultivator hopple.....F. Smith
Cultivator, Lister.....F. L. Dewey
Curtain bracket.....O. Kenitz et al.
Curtain fixture.....J. H. Deitz
Curtain pole.....M. J. Sowers
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Cushioning device.....A. Chabot, Jr.
Cutter and mixer, Combined...C. S. Hardy
Cyanids and cyanamids, Producing.....C. Bosch et al.
Cycles, Elastic pedal crank for...A. Walter
Cycles, Grip control mechanism for motor.....W. G. Henderson
Cystoscope.....R. H. Wappler
Cystoscope.....R. H. Wappler et al.
Decoy, Duck.....M. B. Baker et al.
Dental bridges and plates, Anchorage for..S. F. Gilmore
Dental post extractor.....T. W. Ross
Dental waste receptacle, Sanitary.....T. S. Harlan
Disinfectant device for mouthpieces.....A. E. Le Ford
Display device.....S. Hodge
Displaying sheets, Contrivance for intermittently.....E. W. Brown
Door check.....J. C. Schmidt
Door lock and bell, Combined.....A. W. Summers et al.
Dough divider.....R. A. Schulz
Drain trap.....S. G. Brown
Dredgers, Spud operating mechanism for..J. A. Johnson
Drill.....C. F. Heinkel et al.
Drilling bit, Adjustable..W. T. Evans et al.
Drinking fountain jet head.....H. W. Thorndike
Drum support.....A. Maphet
Dyeing apparatus.....H. Windrath et al.
Ebonites resistiug the action of chlorin, Manufacture of.....M. Wildermann
Electric circuit regulation.....M. Guett
Electric conductors to insulators, Means of fastening.....J. S. Thompson
Electric device, Vapor.....E. Weintraub
Electric heater.....W. S. Andrews
Electric heater, Portable.....F. L. Dyer
Electric lighting, Incandescent..W. L. Bliss
Electric machine, Dynamo.....W. J. Foster
Electric machinery, Dynamo.....C. A. Parsons et al.
Electric switch.....G. B. Reisbach
Electrical apparatus.....W. L. Bliss
Electrical distribution systems, Protecting means for.....G. A. Burnham
Electrical interrupter device...C. H. North
Electrically controlled brake.....E. Price
Electrode and making it, Storage battery..W. Morrison
Electrodes, Binding the active material of positive pole lead (4 pats.)..W. Morrison
Elevator and conveyer.....P. B. Camp
Elevator and safety device.....C. J. Cole
Elevators, Connecting device for pipe.....F. H. Holmes
Engine cylinders, Means for removing carbon from.....E. S. Michener
Engine starting device, Explosive.....E. M. Wood
Engine starting device, Internal combustion.....F. H. Walker
Excavating machine.....F. E. Horning
Explosive.....J. F. O'Brien
Eyeglass mounting (Reissne).....J. T. Laughlin
Eyelet covering machine.....L. Muther
Fabric and yarn therefor (Reissue).....A. De Laski
Fastening device.....W. H. Ganss
Fastening device for shoes and the like, (Reissne).....J. F. Atwood
Faucet and bib cock.....A. J. Gorlick
Feathers, Machine for artificially lengthen-

Feed bag, Automatic.....G. Doutney
Feed water to boilers for prevention of inerustation, eorrosion, or pitting, Mechanical method of treatment of.....C. Haythorpe
Feeder, Automatically operated stock.....B. A. Elliott
Fence post.....J. W. Golden
Fender.....A. H. Leubke
Fender and aprou, Combined.....S. M. and E. G. Teeter
Fertilizer distrihuter.....E. Christopher
Fifth wheel, Vehicle.....F. E. Wilcox
Filter.....C. and C. S. Hines
Fire extinguisher.....J. B. Thomas
Fire extinguishing device for localizing coal dust explosions.....H. Kruskopf
Fire lighting device...P. C. Truelsen et al.
Fire screen, Film.....D. B. Kershaw
Firearm.....G. S. Lewis
Firearm, Repeating.....G. S. Lewis
Fireproof floor construction for buildings..E. V. Johnson
Fishing device, Mechanical....E. E. Owens
Flour bolter.....R. A. Reynolds
Flow through conduits or mains, Means for eontrolling.....F. L. Cross
Fluid pressure regulator.....J. D. Ramsey
Flume.....W. L. Swiek
Flume or trough, Metal.....E. E. Holtz
Flusher, Sidewalk.....E. Watkins
Flying machine.....I. L. Martin
Flying machine.....A. A. Fokken
Flying machine.....R. L. Brough
Fodder composed of peat and molasses, Manufacturing.....E. Joseph
Forging apparatus, Metal.....E. E. Sliek
Fountain mold.....T. J. Harrison
Freight handling means.....S. H. Lihby
Friction top ean.....F. Graham
Furnaees, Fire hrick wall or lining for blast and other.....A. N. H. Strale
Furrow opener scraper.....T. Brennan, Jr.
Fuse.....F. P. Poole et al.
Fuse, Combination time and pereussion..J. Gronek
Gambrel.....F. A. Buller
Game apparatus.....C. Mutter
Game apparatus.....J. A. Sloan
Game device, Ball.....A. Engler
Garbage and waste paper receptacle.....W. M. Kingsbury
Garment.....R. S. Melnik
Garment.....C. R. Leonard
Garment.....A. Goldberg
Garment attaching means..A. E. Richardson
Garter.....E. B. Winters
Gas, Container or cylinder for compressed or liquefied.....R. H. Campbell
Gas engine, Explosive.....L. R. O'Neill
Gas generator, Acetylene...J. M. Crowner
Gas lighting.....P. G. de Schodt
Gas producer blower.....A. B. Duff
Gases, Purification of.....W. R. Whitney
Gate fastener.....T. O. Emery et al.
Gearing.....C. L. Libby
Gearing.....F. W. Crage
Glass delivering maehine.....L. Steelman
Go cart, Folding and convertible.....C. H. Beasecker
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Golf hall.....P. A. Martin et al.
Governor for explosive engines.....L. J. Monahan
Grating machine, Fruit.....J. W. Cheney
Grease cup plug.....G. H. Hudson
Grinding maehine.....C. R. Carpenter
Guard attaching bracket....F. W. Schmidt
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Gun sight attachment, Telescopic.....D. W. Mathesou
Hammock or swinging couch.....H. A. Vossmer
Handle.....R. J. Prins
Hauger support.....W. Goss
Harrow M. Elsas
Harvester attachment.....W. Moore
Harvester, Cane.....A. Gerdes
Harvester, Ensilage.....J. Weigel
Harvesters, Binding mechanism for corn...L. E. Parsons
Harvesters, Twisting mechanism for coru.....L. E. Parsons
Hat pin guard.....J. W. Bieracki
Hatchet and adz, Combined...E. W. James
Headlight directing means, Automatic.....J. P. McElliott
Heating apparatus.....W. N. Dutton
Heating furnace.....F. J. Nice
Heating systems, Feed regulator for.....H. Lemp
Hinge.....J. G. Braun
Hinge.....J. Boness
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Hoist, Multiple.....W. A. Barker
Hose supporter.....C. Sayers
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Hydrant.....J. H. Whitehouse
Hydroearbon burner.....C. Backinger
Hydrocarbon burner, Fluid.....P. Root
Hydrocarbon engine.....H. Hyde et al.
Ignition apparatus, Current interrupter and distributer for electrical.....G. Honold
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Incandescent mantle, Inverted.....C. K. Harding
Indicator and stop device.....C. A. Brink
Insect destroying apparatus.....D. C. McCroskey
Insect killer.....W. W. Parsous et al.
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Insulator.....J. A. Guthrie
Insulator pin.....C. J. Boyland
Internal combustion engine.....J. S. Jennings, Jr.
Internal combustion motor (2 pats.).....B. Brazelle
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Journal bearing.....R. T. Pearce
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Kuitting maehines, Automatie take-up device for flat.....C. Goebel
Knitting needle.....H. Heaton
Knockdown box.....J. J. Long
Lamp bracket and socket, Electric.....E. L. Partridge
Lamp chimney.....Y. K. Buell
Lamp, Electric arc.....E. Weintraub
Lamp, Portable, Eleetric (2 pats.).....E. Gottschalck
Lamp stand.....F. Himes-Cox
Land worker and seeder.....E. Hovey
Lantern extinguisher.....C. T. Siebert
Last.....E. Brothers
Lasting machine.....M. Brock
Lasting machine attachment, Shoe.....R. Bunyan
Lathe appliance.....G. E. Greenleaf
Lathe tool.....R. R. Shapley
Lathes, &e., Adjustable driver or earrier for.....N. W. Baechle
Lease rod support, Movable..A. H. Sawtell
Lever mechanism.....A. Johnston
Lighter, Portable.....C. Hubert
Liquids, Concentrating.....P. Kestner
Lock.....C. Denzler
Lock indicator.....P. F. Augenhraun
Lock strike plate, Door..P. F. Augenbraun
Locomotives, Drifting device for..P. Sheedy
Loom let back mechanism.....C. Lavallee
Loom shuttle checking means...H. Lussier
Loom, Weft replenishing (2 pats.).....E. H. Ryon
Looms for weaving, Mechanism for putting cover on cloth in.....N. Fish et al.
Loop doubling mechanism..F. W. Robinson
Lubricating cup.....C. H. Newhall
Lubricating mechanism.....D. S. Waugh
Lubricator (2 pats.).....C. H. Newhall
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Mail bag.....E. G. Kimmel
Mail box.....C. G. Overmyer et al.
Mail delivering aud receiving apparatus....C. A. Iffert
Mail marking machine.....G. H. Graham
Manure spreaders, Loading attachment for.....C. E. Johnson
Mask, Narcotizing K. A. (A.).....E. Fries
Matrix setting and line casting machine.....J. Dorneth
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Milling and boring machine...C. F. Shanks
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Mineral substances, Concentration of.....J. M. Hyde
Mold feeder, Ingot.....E. J. Turner
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Mowing machine (2 pats.)..W. P. Anthony
Music leaf turner.....E. Meier
Musical instrument, Pneumatic...A. Krell
Nailing strip.....S. M. Randolph
Nest and yard, Hen's.....C. F. Kroeh
Note sheet guide, Perforated (Reissue)..J. O'Connor
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Nut lock.....W. E. Smith
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Oil burner, Rotary.....W. M. Britten
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Ores, Treating.....R. Gahl
Package band fasteuing device.....W. A. Paulus
Package tying device.....A. Pieper et al.
Packing expander.....W. H. Lieber
Paeking or stuffing articles, Apparatus for.....H. S. Dean
Packing ring.....J. J. Sullivan
Paper bag making machine.....T. Hugo
Paper box for culture tubes and similar articles.....P. B. Myers
Paper corrugator.....E. C. Rinner
Paper machine.....C. E. Pope
Paper machines, Web feeding and drying apparatus for.....C. E. Pope
Parachute and helicopter, Combined.....N. W. Knight
Peanut picker.....P. J. Theus
Pegging machine.....O. Ashton
Pen clasp, Fountain.....T. K. Felch
Pen, Drafting.....E. R. Smith
Penholder.....E. Borron
Perambulator and hag, Convertible.....E. P. Kursten
Peroxid active material and making it. Binder for (3 pats.).....W. Morrison
Piano action, Player.....S. S. Donovan
Piano hammer molding and gluing machine.....M. Gardner
Picture exhihitor.....G. Kobich
Pipe joint, Ball and socket.....C. A. Kiel
Pitchometer.....W. F. Rice
Plow.....W. L. Paul
Plow subsoiler attachment....J. F. Palmer
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Pocket, Foot.....J. F. Harris
Pot furnace.....S. O. Richardson, Jr.
Power transmission device.....J. Lovely
Pressure gage.....C. O. Everhart
Pressure reducing device.....T. H. Manchester
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Printing machine.....W. Scott
Printing machine, Blue....F. F. Metzger
Printing mechanism.....A. H. Bates
Printing plates of metal, Etching fluid for flat.....O. C. Strecker
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Propeller.....J. F. Nettle
Propeller, Screw.....F. Broussouse
Propellers, Shaping machine for screw....A. Muhlberg
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Pulley.....O. Dittsworth
Pulverizer.....C. J. Tomlinson
Pulverizing mill W. A. Galland
Pump.....G. Robson
Pump unloading device.....W. V. Turner
Pumping apparatus.....X, Caverno
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Rail fastener.....A. Szabados
Rail joint.....J. M. Loffland
Rail joint.....A. Szabados
Rail joint.....J. H. and C. J. Tressler
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Railway eross tie.....O. E. Hall
Railway switeh, Automatic....R. H. Conley
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Ratchet wrench.....W. G. Ruseoe
Razor stropping machine.....A. J. Postaus
Reecptacle, Collapsible.....E. von Vargyas
Refractory article.....G. Weintraub
Registers, Heat deflecting and soot catehing attachment for hot air...M. A. Forward
Resin from waste products, Reeovering...F. L. Huggins
Ringer.....W. W. Dean
Ritualistic purposes, Tool or instrument for.....B. T. Woods, Sr.
Rivet setting machine, Multiple.....A. R. Havener
Roach exterminator.....N. R. Levi
Rod bending machine.....H. H. Jensen
Roof light.....A. Klein
Roofing plate, Sheet metal..H. E. Moomaw
Route indicator.....J. B. Rhodes
Safety appliauce.....W. E. Barton
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Sash adjusting device, Window.....A. G. Lindley et al
Sash elip, Metallic window..C. W. Davock
Satchel lock.....D. Morgenstern et al.
Sawing machine, Wood...A. M. Zimmerman
Scale A. Ruch
Scale N. Nilson
Scale, Computing.....R. B. Larrabee
Screw driver and drill, Spiral..T. J. Fegley
Seal, Cau nozzle.....H. W. Phelps
Seam ripper.....J. E. Daniels
Sewing machine spool holder (now by marriage E. M. Jones).....E. M. Elsden
Shade and curtain hanger..P. J. Eveleigh
Shade cloth, Rolling-off machine for.....L. B. Girard
Shade holder.....G. W. Goodridge
Shaft and tongue, Coupling..C. C. Coulter
Sharpening machine, Razor....E. Tessmer
Sheet feeder.....R. S. Payne
Ship locator and raiser.....W. N. Bell
Shock ahsorber.....J. H. Woodring
Shock absorber adjustment..B. L. Lawton
Shock loading machine, Grain.....M. E. Weeks
Shoe shining machine.....P. Amadeo
Shoe tree.....J. S. Hansen
Shoring tool.....W. R. McLendon et al.
Shuttle.....C. Pommier
Signaling system.....J. Poe
Signs, Apparatus for preventing sparking at the contacts of electrically illuminated.....R. F. Venner
Sliver, Vegetable.....W. Bush
Smoking pipe.....F. Ansley
Snow plow.....F. J. Hayward
Sound records, Making.....F. L. Dyer
Sound records, Re-pressing disk.....T. H. Macdonald
Space block.....E. H. Farquhar
Spark arrester.....E. G. Taack
Spark plug attachment..H. C. Hemmeter
Speculum, Mouth.....S. B. Dunn
Spike.....M. Rasmussen
Spinning frame creel supporting rail.....L. T. Houghton
Spool rack.....S. Haas
Spraying machine.....W. O. Quest
Square, Folding.....C. A. A. Shakely
Stacker and loader, Hay.....L. R. Shafto
Stage effects, Electrical apparatus for....A. L. McMurtry
Stage scenery.....E. G. Craig
Stamping device.....W. J. Grotenhuis
Starting device.....J. McNamee
Stay, Corset.....G. E. Hawes
Steam engine, Revolving piston rotary....J. E. Sackett
Steam generator.....J. W. Kidney
Steering gear, Compensating.....E. T. Reichart, Jr.
Stereotype plates, Method and apparatus for making.....J. M. Dow
Sterilizing apparatus.....H. Op de Hipt
Stopper.....H. M. Brown
Storage battery.....J. L. Smith
Store front construction.....S. D. Kelley
Stove and lamp.....H. A. von Post
Stream dividing apparatus.....J. L. Ferguson
Stump puller.....E. C. Ellson
Switch throwing mechanism..P. J. Reiger
Table service device.....S. Anderson
Tack pulling maehine, Insole.....O. C. Rumsey
Talking machine.....W. N. Dennison
Talking machine.....J. B. Browning
Talking machines, Automatic brake for....T. Birnbaum
Teeth articulator, Artificial.....M. Weiss
Telegraph systems, Printer for multiplex printing.....D. Murray
Telemeter.....O. Eppenstein
Telephone.....R. A. Boniventure
Telephone.....C. C. Blackham
Telephone and other poles, Mold for bases of.....J. A. Garey
Telephone or telegraph poles, Cross arm for.....J. R. Ferringer
Telephone receiver.....W. W. Dean
Telephone transmitter.....M. Moloney
Telescope, Hinged double.....A. Steinle
Temperature control, Compensating system of.....H. G. Geissinger
Temperature control, Remote.....H. G. Geissinger
Tension device.....A. Crawford
Thermostatic instruments, Casing for.....G. Porter
Threads, Manufacturing fine artificial.....C. R. Linkmeyer
Threshing machine.....A. R. Cooper
Tile machine, Roofing.....O. Walter
Tire.....E. Dettelbach
Tire, Armored.....V. A. Rouilliard
Tire, Cushion.....A. Hajos
Tire, Resilient.....G. S. Adams
Tire vulcanizing repair apparatus.....C. F. Adamson
Tires, Outer cover for pneumatic.....J. C. Barker
Tires, Wheel rim for pneumatic.....C. G. Kleinschmidt
Tombstone, sign &c.....P. F. Nachtigall
Tongs.....W. H. Newville
Tool, Electropneumatic.....A. Palmos
Tool holder, Floating.....B. Rindfleisch
Top.....A. E. Gibbs
Toy, Gyroscopie.....M. L. Hawks
Toy knitting device.....F. C. Rehm
Toy vehicles and the like, Apparatus for actuating.....C. P. Pfeil
Tractor.....W. S. Boyd
Transparent and translucent bodies, Manufacture of.....K. W. Spalteholz
Trolley.....H. A. Krause
Trolley, Eleetric.....L. M. Davis
Trolley switch, Overhead...E. H. Anderson
Trolley wheel for electric cars..J. C. Eames
Trolley wire suspension deviee..E. Kindler
Tromhone, Slide.....G. E. Riblet
Trousers hanger.....G. R. Bowman
Trowel.....W. A. Newton
Truck, Logging railway.....C. Berryman
Truck or under carriage for railway, tramway and mining vehicles, Axle.....J. S. Warner
Truck, Pallet.....J. L. Neble et al.
Trunk.....R. Simonsen
Tubes, Machine for forming aud electrically welding.....E. J. Guay
Turbine, Combined ahead and astern.....H. W. Ridsdale et al.
Turret operatiug mechanism....J. H. Jann
Typewriting and similar machines, Key cap for.....C. F. Ehmsen
Typewriting machine.....G. J. Barrett
Typewriting machine.....S. P. Harry
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Typograph machine.....J. Dorneth
Universal joint (2 pats.).....A. H. Fetzer
Valve.....C. R. Ballard
Valve, Check or safety.....A. E. Bosse
Valve, Flap.....C. N. Scott
Valve for house water supply systems, Pressure operated controlling.....R. H. Nelson
Valve gear.....J. H. Gentry
Valve, Oil well.....J. M. Loffland
Valve seating implement.....A. W. Meitz
Vanity box.....P. Nocard
Vegetable sorter.....O. W. Fisher
Vehicle hack up brake.....D. T. Walsh
Vehicle door opening device.....E. B. Rhodes
Vehicle hound.....M. F. Meath
Vehicle spring.....R. J. Edwards
Vehicle steering device, Power propelled..R. Stock
Vehiele, Trackless power driven.....I. E. Palmer
Vehicle washer.....E. Muller
Vehicle wheel.....G. B. Lambert
Vending and registering machine, Ticket..J. W. Small
Veneer taping machine.....W. J. Kelly
Vessel, Self propelled.....A. and A. M. McDougall
Wagon, Asphalt melting...H. M. Kingsley
Wagon body.....W. E. Brelsford
Wagon hox.....E. A. Saltzman et al.
Washboard.....A. A. Jones
Washboard.....G. Melber
Washing machine.....O. W. Robeson
Watch.....W. Haiues
Watch album.....I. Kasindorf
Water closet bend.....B. Oakes
Water elevator.....M. Schichtl
Water heater, Auxiliary..J. S. Makin et al.
Water treating process.....J. E. Caps
Weapons, Sighting of short barreled.....W. E. Steers
Weeder.....G. G. McTaggart
Winding machiue, Cross.....J. Schweiter
Windmill.....L. W. Noyes
Window cleauer.....J. E. Heckert
Window screen, Adjustable.....S. G. aud S. A. Foster
Window, Swinging.....E. Culver
Wire drawing.....J. T. H. Dempster
Wire stretcher.....J. W. A. McGilvrey
Wood, Preserving.....C. H. Curtis
Woodworkiug machine attachment.....W. T. Boothby
Wrench.....J. W. Schwab
Writing characters, Device for produeing..G. Bahr

Issued April 9, 1912.

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Acid making apparatns, Sulfuric...C. C. Meigs
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Aeroplane...A. E. Beaudett
Air brake hose coupling...O. P. Wilhelm
Air propeller...J. H. Buchanan
Air regnlating apparatns...G. von Schapringer
Air testing apparatns...W. S. Leech
Airship...S. P. Watt
Alarm apparatus...J. D. Nelson et al.
Alloy of titanium and zinc, Prodncing the binary...A. J. Rossi
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Alloys of manganese and titanium, Prodneing...A. J. Rossi
Alloys of the precious metals and increasing hardness of such alloys (2 pats.)...A. J. Rossi
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Apparel, Lock for wearing...F. G. Stringer
Assorting and sizing machine...J. J. Brine
Antomobile control lever...L. Chevrolet et al.
Automobile door...L. R. Colbert
Antomobile doors, Buffer for...L. A. Bedard
Automobile horn...W. Pennock
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Automobile lamp bracket...J. E. Browne et al.
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Automobile locking mechanism...C. L. Maskey
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Back rest and wind shield, Combined...I. E. Palmer
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Bearing, Ball...H. Hess
Bearing for electric meters...W. H. Pratt
Bearing, Support ball...P. Bruhl
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Bed movement...R. T. Johnston
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Bee feeder...G. L. White
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Belt flight...N. S. Cole
Belt guide, Automatic...R. Johnson, Sr.
Belt shifter...S. R. Bailey
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Bicycle saddle...D. S. Troxel
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Bit frame...E. S. Lagarde et al.
Blind, Metal slat Venetian...W. H. Hannam
Blower, Fluid jet...T. Gruenwald
Boat...B. T. Dalafield
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Boiler structure, Steam...H. H. Tracy et al.
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Bolt cutting machine...F. A. Gillette
Boot and shoe...P. Dosch
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Bore hole, Means for straightening or altering the direction or conrse of a...F. G. Seineke
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Bottle capping machine...W. J. Cunningham
Bottle carrier...F. L. Cummings
Bottle case...G. G. Roberts
Bottle, Non-refillable...W. P. Upham
Bottle, Self measuring non-refillable...E. Rothman
Bottle stopper...M. W. Send
Bottles and packages, Cooling device for...G. T. Bailey
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Box board cutting and scoring mechanism...T. H. Clinger
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Brake...F. O'Brien
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Brake mechanism for vehicles...F. Rolland et al.
Brake rigging...W. F. Kiesel, Jr.
Brake shoe...C. W. Armbrust
Branding instrument, Cattle...I. R. Van Wart
Brush...R. L. Anderson
Brush for power marking machines (Reissue)...W. W. McCoy
Bnffer beam...C. T. Westlake
Building construction...S. Giletti
Building material constructiou...A. M. Zimmers
Bulkhead openings and the like, Protective plates for...G. Mazzolini
Burner...W. E. McCoy
Cabinet, Grocer's...W. E. Lewis
Can flanging machine...W. F. Butler
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Cap hemming machine...G. Horvath et al.
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Car coupling...A. S. Waldrep
Car coupling...W. S. McGinnis
Car drop door mechanism...J. E. Tesseyman et al.
Car, Dump...O. W. Meissner
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Car holder...W. F. Myers
Car journal bearing, Railway...S. H. Campbell
Car or other vehicle fender...H. W. Weiss
Car seat arm rest...F. J. Leigh
Car uncoupling mechauism...R. W. Burnett
Car underframe...V. M. Summa
Car ventilator...G. L. Alleu
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Cash register...J. F. Parker
Caster...M. B. Schenck
Caster, Disappearing folding...N. C. Toll
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Catamenial napkin...E. Sprague
Centrifugal switch...C. J. Webster
Chain link...H. E. Hayward
Chandelier, Folding...W. Lumley
Check holder...E. E. Kaech
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Cherry stemming advice...R. S. Thompson
Child's chair...M. L. Beistle
Chocolate dipping machine...L. M. Lange
Chuck, Bevel gear...C. Stvanek
Chuck, Self locking drill...W. H. Caster
Churn...J. R. Gilda
Cigarette box and match holder, Combined...A. Q. Walsh
Circuit breaker...C. C. Badeau
Clasp...J. Ehmann
Clevis and clip, Combined...A. M. Haveus
Clock, Electric...S. C. Vincent
Coaster brake...W. P. Gordon
Cock, Gage...R. B. Swinny
Coin handling machine...R. B. Ware
Coin tray...L. T. Savage
Collar attachment, Scarf holding...T. S. Hamiltou
Compass, Marine (3 pats)...H. Hertzberg
Compressed air machine...J. G. Saureumann
Computing machine...J. Oss
Concrete construction, Anchor for...F. Chatfield
Concrete mixing machiues, Stroking attachment for...F. W. Swautusch
Concrete reinforcing bar...D. Kerr
Conduit...A. P. Hinsky
Control apparatus...E. F. Northrup
Control apparatus, Remote...W. M. Scott
Controller, Auxiliary...R. Cramer
Conveyer...H. Coulston
Conveyer feeding mechanism...H. D. Pratt
Corks, Automatic feeder for the metallic caps of crown...A. Bogdanffy
Corn husker...J. Linder
Corset fitting chart...S. L. Adler
Cot, Covered folding...R. Snyder
Cotton pickers' sacks, Attachment for...T. P. Reed
Coupling...D. F. Langell
Coupling and yoke...W. Blackmore
Coupling attaching and testing machine...J. P. Buckley
Crank manufacture...T. Mercer
Crape hanger, Door...M. T. Miller
Crate...W. Beehler
Cribs, &c., Baby holder attachmeut for...M. J. Ross
Culinary article...C. Nelson
Culverts aud bridges, Adjustable mold for...P. C. Merillat
Curling iron heater...C. P. Shinn
Current transformer...L M. Schmidt
Curtain pole and bracket...J. W. Lovejoy
Curtain pole ring...C. Remhof
Curtain stretcher...J. O. Holmquist
Curtain support...J. T. Cole
Cycle running gear, Motor...C. Hendricksen
Cylinder, Toothed...F. C. Stevens
Deckle strap...F. L. Smith
Deflector, Flame...E. Mireau
Dental broach...L. L. Funk
Diffusing cluster...W. D. Ryan
Dish drying rack...L. Goehr
Dispenser...C. De Julio
Display apparatus, Motor for advertisement...W. H. Thompson
Distributer...G. A. Berry
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Diving suit...C. Anderson et al.
Dock, Floating dry...A. C. Cunningham
Door...H. F. Cuutz
Door...J. C. Duner
Door, Combined screen and storm...L. Hansen
Door, Pay-as-you-enter...E. N. Kleinbaum
Draft equalizer...B. P. Martin et al.
Draft gear...H. T. Krakan
Drill forging and sharpening machine...C. O. Borkman
Drill magazine and chuck...W. F. Sweet
Drills, Drill hole eleaning attachment for hammer (Reissue)...D. S. Waugh
Drinking cup...A. H. Hartman
Drinking fountain...A. Whittier
Driving gear, Electric operated...J. A. Essberger
Dump box...R. Matthies et al.
Dust collector...G. A. Kluge
Dye, Vat...H. Friedmann
Egg candler...H. R. Morris
Electric circuits, Time switch for...F. W. Smith
Electric lighting device...L. W. Anderson
Electric moldings or condnits, Branch block for...G. A. Joran
Electric protective circuit...O. Jacobson
Electric switch...L. B. Abbott
Electric switch, Time controlled...C. M. Crook
Electrical switch...A. H. Kling et al.
Electrode or pencil, Arc light...I. Ladoff
Electrolytic rectifier...W. Morrison
Electrolytic rectifier...W. Morrison
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Elevators, Automatic cut off valve for pneumatic cotton...H. W. Ligon
Elevators, Foot guard for...W. S. Ross
Ellipsograph...T. Ohye
Embroideries, Apparatus for cutting the waste from...A. Tscherne
Embroidery foundation, Machiue for cutting...A. Tscherne
Engine cylinders, Compound for removing carbon from...D. E. Cripe
Engine lower crank case, Combustion...W. H. Goldstine
Engine starter, Internal combnstion...G. G. F. Boswell
Engine starting device, Gas...C. E. Dunham
Engines, Electric igniter for explosive...L. E. Weguer
Engines, Low tension sparking mechanism for gas...H. J. Podlesak
Engines, System and apparatus for starting internal combustion...J. C. Boyle
Excavating shovel...C. A. Morris
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Explosive engine...J. W. Meaker
Eyeglass lens...W. K. Knight
Faucet, Filtering...L. Dion
Feed bag...A. McMillen
Feed trough...S. H. Himis
Feeding mechanism...H. J. Douglass
Fence post mold...T. H. Kruse
Fender...F. N. Lephart
Filament connection...J. W. Howell
Filament holder, Lamp...L. Glaser
Filaments to leading-in wires, Fusing lamp...J. W. Howell
Filaments to metal wires, Welding...J. W. Howell
File, Papers...P. H. Yawman
Fire escape...V. W. Heydlauff
Fire escape...R. Sideman
Fire hose crossing for railways...T. D. Waller
Fires in telephone iustallations, Extinguishing...C. Gautsch
Fishing tackle...J. Nordlund
Floor finishing and surfacing machine...G. S. Reynolds
Fly trap for window and door screens...C. A. Fulcher
Flying machine...J. A. Warrick
Flying machine...J. Raclot et al.
Flying machines, Automatic balancing mechanism for...L. Lukacs
Folding machine...J. W. Holmes
Food, Machine for manufacturing grain into form for...H. D. Perky
Fork and rake, Combined...J. Miller
Form stand, Dress...W. J. Taplinger
Frame construction...F. B. Upton
Friction brake...H. C. C. Brunt
Fuel, Apparatus for feeding fine...J. A. Welton
Fuel feeding device, Gravity...H. Clouston
Fulling machine...A. G. Schultz et al.
Fumigator...P. T. McCarty et al.
Funnel, Automatic...F. E. Gilbert
Furnaces and the like, Mechanical charging mechanism for smelting...I. L. Briggs
Furnaces, Apparatus for feeding fuel to...A. Herberer et al.
Furniture, Yieldable support for...J. Markus
Fuse changer...R. C. Grout
Fuse, Electrical...S. F. Esteel
Game...G. J. Jaceard
Game apparatus...H. V. Robinson
Garment...W. E. Bray
Garment for stage effects...A. L. McMurtry
Garment hanger...M. Raughtigan
Gas burner for furnaces...E. H. Kesselman
Gas cut off, Automatic...A. M. C. Bubb
Gas engine...J. H. Pierce
Gas engine...J. Loftus
Gas engine...R. S. Moore et al.
Gas producer...W. B. Hughes
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Grading machine...C. O. Wold
Grating machine...A. Robertson
Grain drill...P. Broman
Graphite metal aud prodncing it...R. T. Cole
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Greenhouse bench...M. Winandy
Greenhouse construction...M. I. Jacobs
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Harrow gang equalizer, Disk...L. B. Wygant
Harvester attachment for engines...O. W. Foust
Harvester and binder, Grain...A. L. Powell
Harvesters, Flax and other grain attachment for...F. Linha
Hasp fastener...J. Gerschi
Hat pin point protector...C. Ekker
Hay or grain gathering machine...T. S. Hamilton
Headlight, Automobile...E. J. Lutwyehe
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Hinge...J. C. Hylton
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Hood, Fresh air sleepiug...A. Bennett
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Hose carriage...P. G. Esler
Hose coupling...E. H. L. Englund
Hose coupling...J. W. and J. E. Stine
Hose pipe, Metallic flexible...B. M. Pechstein
Hose supporter strip...C. J. White
Hot water heater...J. A. Hill
Hub for vehicle wheels, Resilient...E. J. and I. G. Seifried
Hydraulic jack...G. Nicolai
Ice cream freezer...J. S. Parrish
Ignition system, Dual...R. H. Cunningham
Impulses, Determining frequency of periodic...R. A. Fessenden
Incubator...L. C. Byce
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Ingots or billets, Mechanism for piereing metallic...M. U. Wilkstrom
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Insulating fabric, Machine for making...G. H. Ellis
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Ladder, Box car...O. Anderson
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Lamp hanger, Arc...J. T. Beechlyn
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Lamp, Self righting...L. A. Bartlett
Lamp socket, Electric...H. Wheeler
Lamps, Guard for incandescent...H. Hubbell
Lamps, Lock guard for incandescent...H. Hubbell
Lamps, Mantle burner for kerosene...G. S. Rider
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Lasting machine...W. Chick
Lasting machine...A. E. Jerram
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Latch...S. Ducsay
Latch, Door...G. T. Buddle
Latch, Gate...E. Raaths
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Lathe, Spindle turning...C. H. Waymoth
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Levee machine...W. R. Bordges
Lighting fixture...J. T. Robb
Lightning arrester...A. J. Wurts
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Liquids, Recovering volatile...C. Harrison et al.
Litter carrier...C. B. Willenborg
Loading and unloading apparatus...J. W. Carriker
Locking device for traveling and sample cases, &c...J. T. Binkley
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Marble, Treatment of artificial...H. Gallinowsky
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Measure...C. Messner
Measure for ropes, &c., Linear...N. D. M. Yorke
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Measuring instrument, Electrical...C. McClair
Measuring time intervals, Device for...W. H. Pratt
Mechanical movement...R. G. Clyne
Mechanical movement...C. M. Grey
Medicinal bath...A. Hempel
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Microscope...K. M. Stahl
Milk can...G. Shepard
Milk can, Sanitary...J. R. Bostwick
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Mop holder...W. H. Billings
Mop holder and wringer, Combined...F. O. Tarbox
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Motor control system...T. von Zweibergk
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Necktie holder and shield.....J. Baeumle
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Nut lock.....J. Buttner
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Oil and gas burner, Combined.....A. R. Anthony
Oil cup or boxing.....E. A. Smith
Oiling system for automobiles..E. M. White
Ordnance, Cartridge extracting and ejecting mechanism for breech loading.....A. T. Dawson et al.
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Paper hoxes, Reinforcing.....C. S. Bird
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Photographic filius, Apparatus for the manufacture of.....O. Wintermeyer
Photographic films, Daylight developing tank for.....E. L. Hammer
Piano music desks, Support for..J. Ragona
Piano players, Note sheet for autopneumatic.....M. Clark
Piano players, Self adjusting attachment for.....T. H. Cabasino et ai.
Pick handle.....A. Bohy
Picker rod stand, Auxiliary....D. E. Jones
Pictnre holder.....E. Fleming
Picture machine, Moving..C. R. Uebelmesser
Pile driver, Electric.....C. D. Haskins
Pillows and the like, Machine for stuffing.....J. B. Patterson
Pincers, pliers, and the like..W. W. Lyons
Pipe or hose coupling.....P. R. Bradley
Plaiting device.....J. J. Temple
Planter.....W. Sobey
Plate.....L. J. C. Schwenn
Plate holder.....F. L. Schley
Platform hood, Cast.....A. E. Ostrander
Pliers for stripping insulation from electric wires.....F. P. Hnston
Plow beam.....C. P. Meek
Plug, Separable attachment.....R. B. Benjamin
Plumb bob carrier.....W. A. Laird, Jr.
Pneumatic cleaner.....T. O. Osterholm
Pnenmatic cleansing apparatus.....A. E. Moorhead
Pocket knife.....W. J. Minter
Pole and shafts.....H. A. Hunter
Porcelain drilling machine.....J. Riddell
Poultry apparatus.....E. W. Olson
Precision, Instrument of.....J. Gasgott
Pressing machine.....H. H. Burns
Pressing machine, Garment.....W. J. Danenhower
Printing machine, Multirevolntion.....W. Scott
Printing press.....R. D. Coy
Propeller.....J. A. Irving
Propulsion, Boat.....J. R. Walter
Pruning implemeut.....A. M. Ottinger
Pulley.....H. J. Gilbert
Pulley.....J. Petrello
Pulley block.....P. J. Georgeson
Pulley, Loose.....R. I. Fancher
Pulp screeu.....J. Olsen
Pulverizer.....M. F. Williams et al.
Pump.....G. Johnson et al.
Pump, Centrifugal.....G. C. Knechler
Pump, Centrifugal.....T. R. Hayton
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Radial drill.....H. M. Norris
Radiator.....C. S. Carlberg
Radiator.....G. W. Dunham
Rail clamp.....E. H. Korges
Rail fastening.....W. Iring
Rail joint.....J. Berlien
Rail joint.....R. P. Etchison
Rail joint, Automatic continuons..C. Troup
Rail joint, Insulated..W. H. Sellew et al.
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Railway crossing guard, Automatic.....G. T. Hardeuburgh
Railway signal recording system.....T. J. Pyles
Railway switch, Automatic.....W. T. Lawhorn et al.
Railway terminal.....J. D'Esposito
Railway track appliance.....T. Maney
Razor.....H. J. Gaisman
Razor.....F. May et al.
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Razor, Safety.....C. E. Dunn
Razor, Safety (6 pats.).....H. J. Gaisman
Razor stropper and honer.....A. C. Hayden
Recording marine conditions, Method of and apparatus for.....H. T. Barnes
Reel carrier.....C. Flitch
Refrigerators, Water cooling ice tray for..J. Phillipps
Reins, Spreader for.....J. A. Tychon
Resilient wheel.....A. Sherwood
Resistance unit.....G. E. Stevens
Riding habit.....M. Cowen
Rivet head drill.....L. Bennett
Riveting cloth, leather, and similar materials, Apparatus for.....J. E. Archer
Roasting furnace.....T. D. Merton
Rock drill, Portable.....G. H. Bibb
Roofing material.....S. G. Wright
Rosette, Shock absorbing.....S. B. Paine
Rotary steam engine (2 pats)..D. P. Upson
Routing machines or the like, Adjustable form for.....J. E. Segniu
Rubber shoe.....J. H. Roedding
Safety lock for keyholes.....T. E. Good
Sanding machine.....E. G. Cox
Sash lock, Window.....S. C. Sladden
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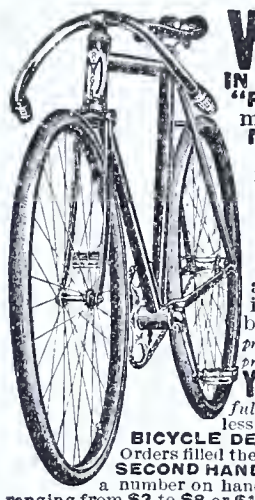
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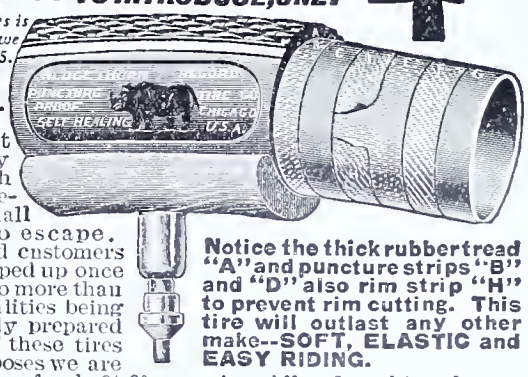
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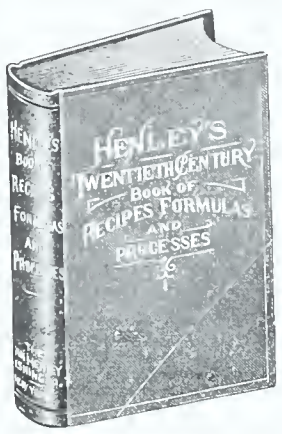
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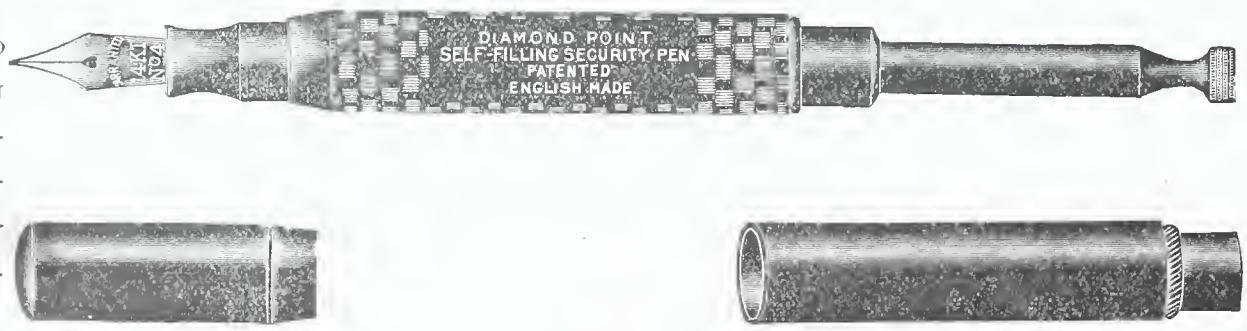
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VOL. XXIV. NO. 6. } WASHINGTON, D. C.---JUNE 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

A CENTURY OLD CHAIN SUSPENSION BRIDGE.

By FRANK C. PERKINS.

THE accompanying illustration shows the construction of a remarkable chain suspension bridge in Newburyport, Mass., which has been in service a hundred years. The writer is indebted to the American Rolling Mill Company of Middleton, Ohio, for the photograph of the old bridge, whose wrought-iron links were tested after being in use for 100 years.

It may be stated that the chain links were tested in direct tension, the load being transmitted to the links by U-shaped half-links of 1¼ inch round steel. The latter were gripped by the wedges of a 400,000 pound testing machine, so that the application of the load was in all respects similar to the manner of loading the links in actual service in the suspension chains.

It is of interest to note that the average of yield-point was about 24,000 pounds per square inch, and the average ultimate strength about 37,500 per square inch.

The following description of this remarkable bridge, from the Newburyport "Herald", Dec. 14, 1810, is of historic interest.

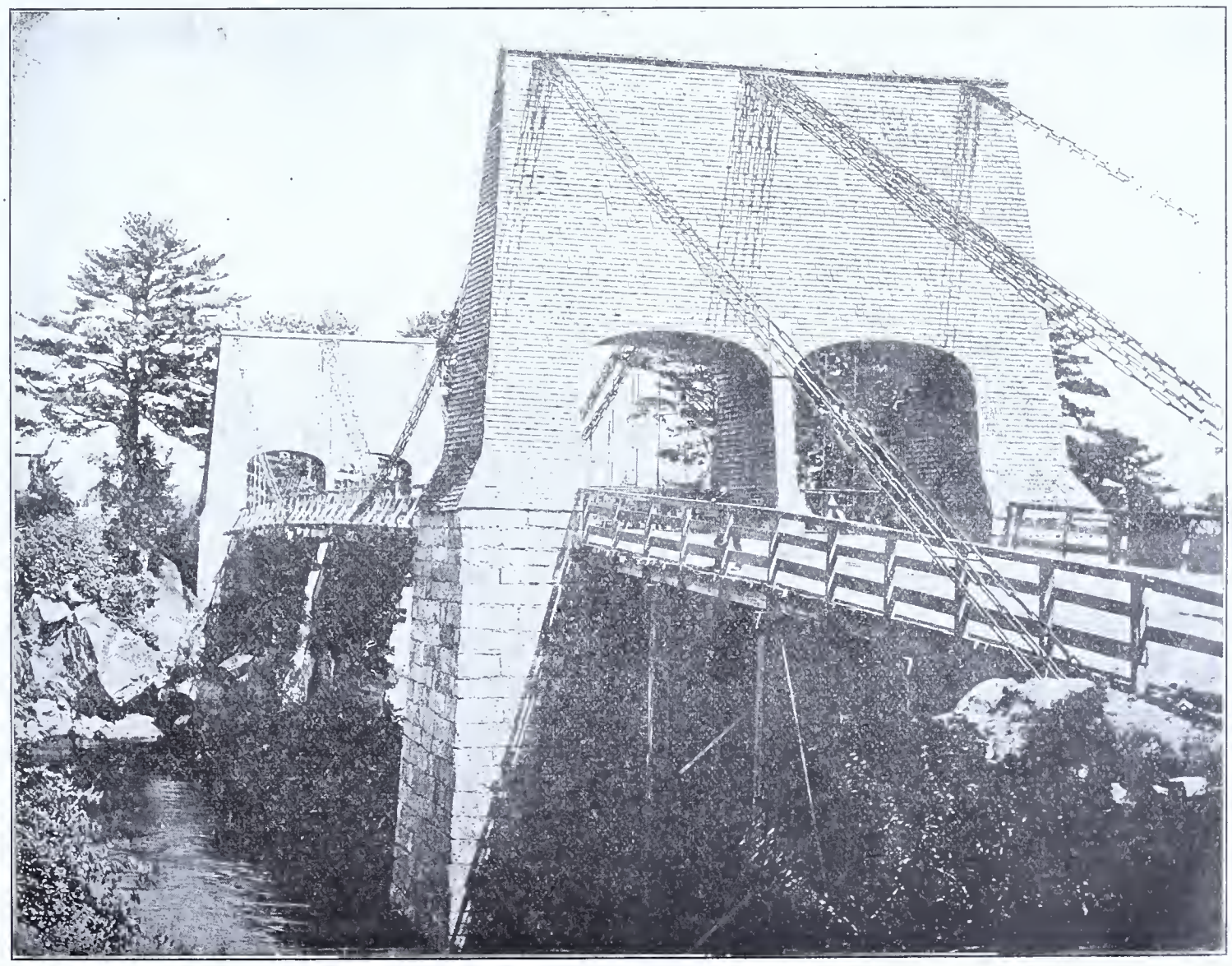
"The chain bridge, recently thrown over the Merrimac, three miles from this town, is now open for the accommodation of travelers. As the principles and mode of its construction are novel in this part of the country (being the first of its kind erected east of the Schuylkill) a particular description may be interesting to some readers.

"It consists of a single arch of 240 feet span, and 40 feet at its greatest elevation from the water. The abutments, 49 x 25 feet at the base, 45 x 20 at the top, and 37 feet high, are constructed entirely of rough and split stone, the latter of which is used in the exterior walls, each stone varying from one half to two and a half tons in weight, and from three to fourteen feet in length, connected together and secured by iron bolts.

"The whole quantity of stone is 4,000 tons. On the abutments at each side of the river, framed piers or uprights are erected, of a sufficient height, and capped with stout timber to support the chains from which the flooring of the bridge is supported. The chains, ten in number, were passed over the caps of the uprights, and extended or slackened so as to pass under the middle cross joints of the flooring and to describe a sinking or curve, the entire distance of which, from a right line, is one-seventh part of the span: these are tripled where they bend over and rest on the caps, are each 516 feet in length and 256 feet along the curve line between the uprights (with an angle of the same inclination that the curve makes inward), to a space below the surface of the ground, and are there secured sufficiently to counterbalance the bridge and any possible weight that may be brought thereon.

"The flooring admits two passages, 15 feet wide. Horses with carriages may pass upon a full trot with very little perceptible motion of the bridge. The whole weight of flooring, chains, suspenders, etc., commonly supported, does not exceed 100 tons, transient weight, the third part of which it is presumed can never be brought upon the bridge at the same time. The total cost is about $25,000.

"The principle upon which this work was constructed was originally invented by James Finley, of Fayette, Co., Pa., and patented by him in 1808. It has since



AN OLD SUSPENSION BRIDGE LOCATED IN NEWBURYPORT, MASS.

been considerably improved. As its chief materials are iron and stone, the woodwork being an inconsiderable part, very light, and its mode of construction peculiar, its superiority to timber bridges is obvious, and consists in simplicity of construction, durability and ease and cheapness of repair. It is particularly adapted to the bold features of the New England States where rivers have high, precipitous banks, rapid tides and deep waters, and where after fair experiment, we hope to see it generally adopted."

It is stated that the suspension chains for the bridge were forged on the spot, and that the old smithy in which the work was done is still standing, though for many years it has served as a dwelling house, into which it was converted.

Doherty Patents on Gas Producers Upheld.

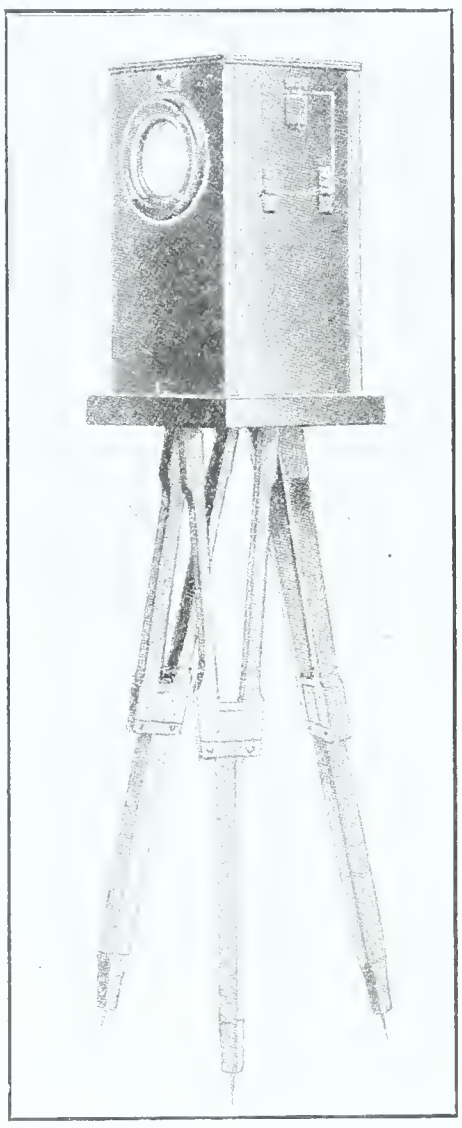
The United States Circuit Court of Appeals for the First Circuit, hearing on appeal the case of the Combustion Utilities Corporation vs. the Worcester Gas Light Company, has rendered a decision fully sustaining the decision of the United States Circuit Court for the District of Massachusetts in favor of the complainant, the Combustion Utilities Corporation. This suit was to establish the validity of the patents of Henry L. Doherty covering an apparatus and process for controlling and regulating combustion in a gas producer. It grew out of the installation of gas benches for the Worcester Gas Light Company which infringed the Doherty patents. The final decision upholds the Doherty patents in every way, and as demonstrating a distinct improvement in gas producers, it will be of interest to all concerned with the problems of cheap power and fuel economy. The evidence advanced in the trial of this case proved that the Doherty apparatus and process realized three things of vital importance to gas producer plant operators, namely, a non clinkering gas producer, a higher economy of fuel and a positive control over the quality of the producer gas.

Amateur Moving Pictures.

We have long suffered from the affliction of the kodak fiend, but have become so accustomed to him that we fail to resent his indefatigable efforts and importunities. Now, however, we are threatened with a new peril—the moving picture fiend. Inventive ingenuity has produced a small camera, about the size of a kodak, by means of which moving pictures can be secured at any time. A small compressed air mechanism is contained within the camera, which is charged by a pump as a pneumatic tire is filled. All one has to do is to press the button, and as long as it is depressed the intermittent exposures are made, the compressed air furnishing energy for operating the shutter. The camera can also be used for ordinary work. Such a device offers the amateur the means for securing incidents and scenes in animation which are far more interesting, when projected by the magic lantern, than still life records.

AUTOMATIC WATER FINDER.

The deeds of the divining rod are recalled by a device which purports to be able to locate water. The instrument, it is stated, has been tested in many parts of the world, and has been adopted after investigation. The Indian government, after tests extending over a considerable period, has issued a special "Blue Book," describing the success attained, and recommending the general use of the device throughout the Empire. If all that is claimed for the instrument be true, it is an invaluable discovery, for the importance of water to the agriculturist is beyond calculation. There is fertile soil in abundance in all



parts of the world: there is sunshine in abundance: there is a world wide market for crops: but without water these things avail nothing. With water the country flourishes; without it, it stretches a barren waste. It is known that in most countries there is an unlimited supply of artesian water only waiting to be tapped, but the problem has always been how to locate it, and thousands of dollars have been literally sunk in the earth, in useless borings. The new water finder is a simple, portable apparatus, by means of which any unskilled person may readily ascertain whether a subterranean stream or body of pure water exists under a spot where boring operations are desired. The principle on which the instrument works, it is claimed, is by indicating the presence of currents which flow between earth and atmosphere, and which, seeking the path of greatest conductivity, are always strongest in the vicinity of subterranean water courses, the waters of which are charged with electricity to a certain degree. In taking observations, wooden pegs are placed at intervals of twenty paces in a direction usually S.E. to N.W. The instrument is tried over each of these pegs in turn, and should the needle work on any one of them, tests are made all round it, and the spot where the greatest movement of the needle is obtained is where the boring should be made. If the needle does not move, subterranean water does not exist under the spot where the instrument is fixed. The instrument will appeal to those who are interested in securing a good and permanent supply of water. Engineers know how often they have bored to great depths without finding water. The hundreds of dollars wasted in this way would have been saved by consulting the water finder.

The instrument indicates water courses flowing underground in a natural state, and not water pipes or sources that have sprung up to daylight.

Observations, it is said, should always be taken on a fine, calm, clear day between 8 and 12 in the morning and 2 and 5 in the afternoon, these being the hours of greatest activity of the vertical earth-air currents. In order to take an observation, the following directions are given:

1. Fix the tripod stand firmly on the ground, with the white line in the centre of the little table, pointing to the magnetic north, as indicated by compass sent with each outfit.

2. Place the instrument on the stand.

3. Place the magnetic needle on its pivot.

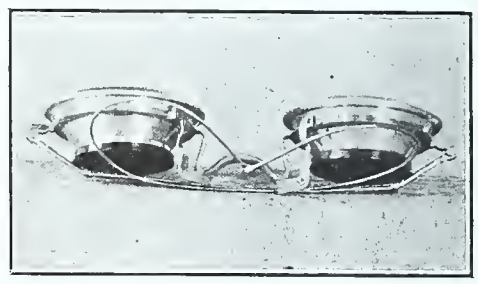
If subterranean flowing water is present below the instrument, the needle will commence to move, the strength of its swing depending upon the volume of water below.

The instruments are made in four sizes: for locating at depths up to 200 feet, for locating at depths up to 500 feet, for locating at depths up to 1,000 feet, and for locating water or oil at depths up to 3,500 feet. They range in price from one hundred and fifty to eight hundred and seventy-five dollars. Experiments recently made with a view to employing the instrument for locating oil wells as well as water springs, seem to indicate that a new sphere of usefulness will be opened for it. In addition to finding water for domestic purposes, irrigation, etc., the device is valuable to architects in showing the presence of water on the site of proposed new buildings. The owners of the device (W. Mansfield & Co., Creewood Buildings, Brunswick St. and Back Goree, Liverpool) always wish to know the diameter and greatest depth of well required when an instrument is ordered, also the geological formation as nearly as can be found, the probable depth from the surface of the ground to solid rock, the facilities for shipment of machinery to and from the size of the well, the amount of water required per day, and the exact location.

TELESCOPE SPECTACLES.

The accompanying illustration shows telescope spectacles which have been devised at Jena, Germany, for the benefit of persons suffering from extreme myopia. By amplifying the retinal image they are a powerful aid to vision. The persons likely to derive the greatest advantage from this instrument are those unable to wear continuously simple correcting glasses of the ordinary type.

Telescope spectacles consist of two components, viz., a large conveying front lens and a similar diverging lens near the eye. The radii of curvature of the two components are such that when the wearer looks at the object in a direct line, his vision will not in any way be marred by distortion, astigmatism due to oblique pencils, and perceptible color effects. Although the metal mounts are made as light as possible, the weight of the telescope spectacles exceeds that of the ordinary spectacles, and it cannot



be claimed for these glasses that they are inconspicuous. The weight varies from one half ounce in the case of spectacles adapted for 18 diopters to three quarters of an ounce in that of glasses for 10-diopters. To obviate internal reflection the mount is grooved and blackened inside.

Tests by Professor Hertel, director of the University Eye Hospital at Strassburg, show that spectacle telescopes of small magnifying power are much to be preferred in the majority of cases. In these glasses the size of the retinal image is increased about thirty per cent as compared with the natural image, and hence is comparable in its ophthalmic effect to the correction obtainable by operation. Telescope spectacles have been brought to a high state of correction so as to enable their wearer to see clearly objects comprised within an angle of forty-three degrees.

Working telescope spectacles have the advantage that they enable the wearer to read at a distance of 10 to 12 inches, even small print. Obviously, the retinal image is under these circumstances smaller than is the case when an intensely near-sighted person views an object at close range with the unaided eye.

THE INVENTIVE AGE contains sound advice to inventors and patentees. For lack of such advice many have lost money. Subscription price, one dollar a year.

Pneumatic Tube System.

A postal employe, who has for the past fifteen years been an expert in the pneumatic tube system of the Post Office Department, has invented a mail tube which may revolutionize the present system of pneumatic delivery. Unlike other systems, this one is operated by vacuum instead of compressed air. Trial tests were recently made of the invention in the subways between the Capitol and House and Senate office buildings, with the result that the government has concluded to install a network of tubes to connect all the executive departments.

The carrier of the pneumatic tube, says *Popular Mechanics*, is propelled by a vacuum of ½ to ¾ pounds per square inch, and travels at a velocity ranging from 30 to 125 miles per hour. The sending mechanism consists of an exhauster, which provides the suction, and two valves, which are operated by a piston. In sending, the cartridge containing mail bag is put between the two valves with the inside valve closed. With the cartridge in this position, and the exhauster working, the outside valve is closed and the inside valve opened, which allows the exhaust to act on the cartridge, carrying it to the other end.

At the other end these two valves aid to check the cartridge. When the cartridge is being sent, the outside valve is closed and the inside valve open. After the carrier has passed the inside valve, it strikes a tripper, which by means of an automatic piston, closes the inside valve. The air between the valves acts as a cushion to stop the carrier, and when the inside valve has been fully closed, the outside valve opens, allowing the carrier to slide forth with enough velocity to take it all the way out of the tube.

The carrier, or cartridge, is a cylinder, 18 inches inside diameter, with six ball bearing wheels on either end. There is about one-quarter inch clearance between the carrier and the tube. One of these tubes will accomodate a mail bag.

It is stated that with an 18-inch tube line, about five miles could be operated with but one exhausting station, but by putting boosters or sub-stations, it would be possible to operate the line any distance. For a line between Washington and New York, about three sub-stations, with a number of auxiliary station, would be necessary to make the system successful.

In this connection it may be noted that the Secretary of the Treasury proposes to establish a pneumatic-tube service between the Bureau of Engraving and Printing and the Treasury Department, about half a mile distant, for the transportation of the millions of dollars in paper money, stamps, and securities, that are sent from the Bureau to the Department. The transportation is now effected by means of big steel vans, and the treasure is guarded en route by half a dozen armed men, and a number of mounted guards. No attempt has ever been made to hold up these vans, but the underground tube is considered advisable, not only as a precaution against robbery, but for economic reasons.

A TRACKLESS TROLLEY.

ELECTRIC trackless trolley lines have been in use for country service in Europe for more than a decade, but in this land little has been done in this line until very recently. One of the first trackless trolley roads in America has recently been built in Laurel Canyon, near Hollywood, Los Angeles, Cal., and serves to connect Bungalow Land, a mountain settlement one and a half miles up the canyon, with the Los Angeles Pacific Railroad. The accompanying illustration shows this electric trackless trolley service on a roadway consisting of a winding path cut out of the side of the mountain to an average width of 25 feet. It has a high bank on one side of the road and a mountain brook on the other. The average grade is about eight degrees and the maximum grade is twelve degrees. This line is mostly curves, there being only 1,000 feet of tangent, hence this road is well suited to test the practicability of the system. The highway is also largely used by automobiles and other vehicles, and experience shows that the trackless trolley cars are unable to turn out for any passing vehicle or any obstruction, and still have a safe clearance.

It is stated that during the early part of its operation, it was necessary to pass over a portion of road which was being plowed up for a change in grade. This made it necessary to drive the car across deep furrows, which was accomplished successfully.

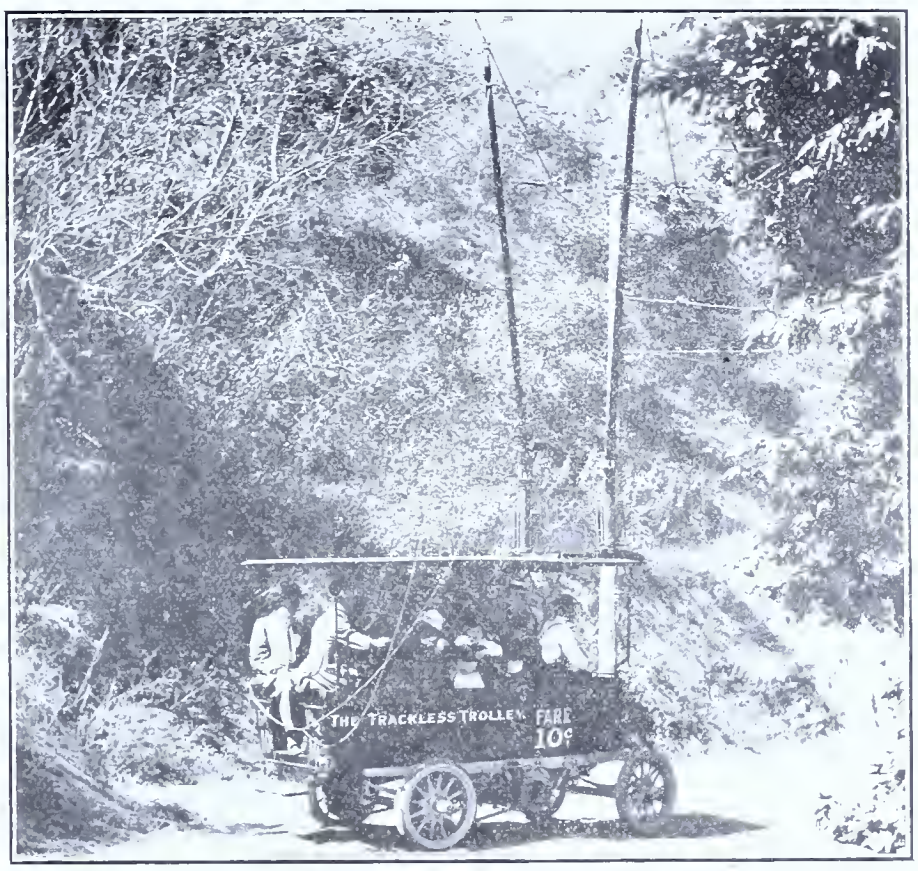
Power is obtained from the Los Angeles Pacific Company, one wire being connected with the trolley car of the railroad system and the other wire with its rails. The trolley wires are 3 0 grounded copper, extending from pipe arm brackets fastened to trolley poles along the railway, these being sometimes on the right and sometimes on the left hand side of the road. The overhead construction does not differ materially from that of the ordinary electric railroad, except that an additional wire is required for the return current.

It is of interest to note that the motor equipment per car consists of two 15-horsepower series motors, of 500 volts pressure, each motor driving one rear wheel by socket and chain, thus eliminating the differential. The trolleys are mounted on the roof of the bus approximately 24 inches back of the front wires and spaced 48 inches apart, which is also the space between the trolley wires.

The trolley poles on the cars are of wood, 15 feet long, carrying a special swiveled form of collector at the end, which is arranged to slip off without damage in case the pole should leave the wire and the collector catch on the overhead. It is stated that there has been no trouble with the collector leaving the wire, although some very sharp curves have to be passed. No turn out is used on the road, and as the grades are constant and the car going down hill is enabled to coast about half the distance on gravity, the car going up as the right of way.

It is maintained that one man can operate the bus, collecting the fares before starting and then taking his position as motorman, remaining at the controller until he reaches the terminal. The cars are of bus type, seating sixteen passengers and weighing about 3,000 pounds and the maximum speed is 25 miles per hour on the level, while on the 12 per cent grade it is about 8 miles per hour.

This unique trackless trolley system is owned by the Laurel Canyon Utilities Co., of Los Angeles, Cal. To Charles S. Mann the president, and to the consulting engineer Mr. R. W. Shoemaker the writer is indebted for the data and illustration.



A TRACKLESS TROLLEY IN CALIFORNIA.

Non-Explosive Receptacles for Gasoline.

The explosion of gasoline, benzine, and other liquids, is rendered impossible by a new device, constructed on the principle of the Davy mining lamp, the wire gauze being replaced by a metal tube especially adapted for use in cans and tanks. The device is formed of corrugated and smooth strips of metal, wound spirally into a tube, the corrugations forming openings for the flow of the gasoline. These tubes are attached, within the can or tank, to the openings, and receptacles having both a spout and a filling opening are provided with two tubes. The liquid stands at the same level in the tubes as in the receptacles, and in being poured into or out of the receptacles, has to pass through them.

Explosion is prevented by the fact that the narrow passages acting as inlets and outlets are formed by heavy metal strips, which cool the burning gases so that the transmission of the flame from the tube into the vessel containing the gasoline is impossible.

As a provision against explosion when there is a general fire in a building, the screw caps of the tubes are composed of soft solder. It is claimed that if fire should reach a storehouse containing tanks of gasoline fitted with these devices, the tops would melt away before the vessels were greatly heated, exposing the gasoline in the tubes to the flames. This gasoline would burn until the tanks were empty, but the bulk of the liquid in each can would be protected and its vapors would fail to explode.

Burgaw, N. C., May 21, 1912.
Editor, INVENTIVE AGE,
Washington, D. C.
DEAR SIR:—

I read Mr. E. C. Rodwicks' letter with much interest, which appeared in your paper of May 1st.

I will suggest my idea of a plan to expose those human sharks referred to, namely, patent salesmen.

My plan is to select a publication as a medium through which the inventor can communicate his experience to others, above his signature.

I will suggest the INVENTIVE AGE, as the most effective medium now at hand.

I am an inventor and am very much interested along the lines mentioned in Mr. Rodwick's letter.

Yours very truly,
C. R. SPEIGHT.

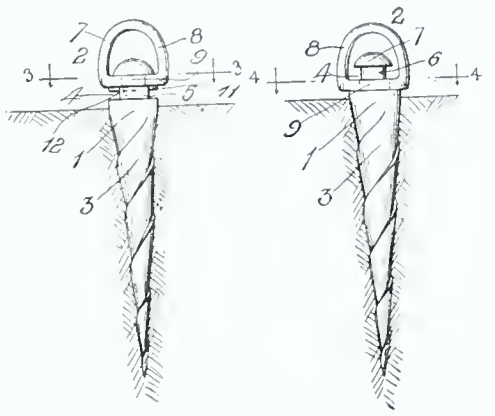
Editor's Note:—(The AGE will be pleased to hear from other inventors along this line. We are willing to do our part to further in every way the best interests of inventors. They certainly need protection against certain so-called attorneys, patent salesmen, promotors and a class of manufacturers who are known to deal dishonestly with inventors. We will not hesitate to expose them when the facts are known and if, through the AGE, any good flows therefrom, it will be our best reward for the time and attention given to the matter.)

CLEVER NEW PATENTS.

Spiral Screw Stake---Wire Splicer and Tightener. Trolley Wheel and Finder---Conductor or Drain Pipe---Horse Feeding Bag.

Spiral Screw Stake.

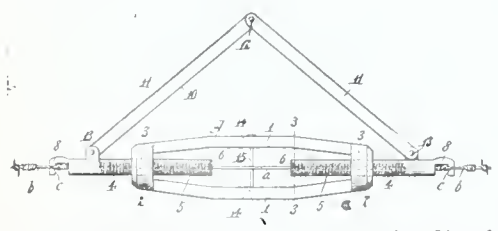
Horses and cattle that are staked out to graze usually manage to get entangled in the hitching ropes, or to get the latter wound around the stake. A device to prevent the latter difficulty has been invented hy James E. Bradford. of Durham, N. C. It consists of a stake having formed thereon a spiral thread, so that the stake may be screwed into the ground, and also having a swivel or loosely connected ring which will turn freely with the movements of the animal, and not become wound up. The drawings show a view of the stake with the ring ready to receive the hitching rope, and also the stake with the ring ready



to serve as a handle to screw the stake into the ground. It will he seen that the upper part of the stake has a reduced stem 4, the lower part of which is angular and the upper part cylindrical. The hitching memher is an inverted U, to which the rope is adapted to be attached. The free ends of this U have a flat base plate in which is formed an opening 10 corresponding to the angular portion of the stem. When the ring 2 is in its lowermost position, the passage 10 will engage the angular portion of the stem and the ring will thus act as a handle to screw the stake into the ground. When the ring is pulled up into engagement with the head 7, the angular passage 10 will engage the reduced cylindrical portion of the stem, thereby permitting the ring to revolve freely. When the stake is in use, the ring is held up by a transverse pin 11, and then the ring may be freely revolved in any direction, so that the hitching rope will not become twisted up on the stake.

Wire Splicer and Tightener.

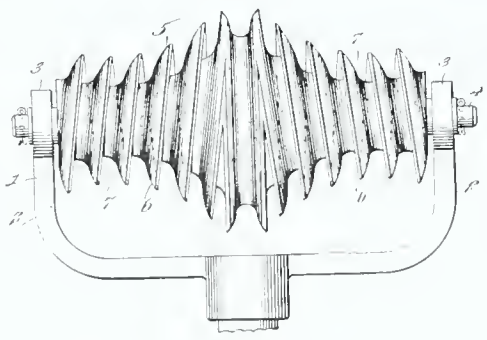
A device by which the ends of telephone, telegraph or even fence wire may be readily and securely spliced, and the wire tightened to any tension desired, has been patented by Solomon H. Riley, of Valley Center, Kansas, and assigned to the Riley Mfg. Co. of Wichita. The device is in the form of



an openwork frame, with longitudinal members and caps horizontally bored to receive bolts 4, as will be seen in the accompanying cut. Each bolt has a shank threaded as at 5 and having one end concaved as at 6, a groove extending longitudinally of the bolt. The outer end of each bolt has a split hook, also grooved. A scissors brace is designated at 10, the arms of which engage with the hooks at the ends of the bolts and hold the bolts from turning and from twisting. The frame of the turnbuckle has openings through which passes a pin to twist the splicing wires. The ends of the wires *b* are turned upward into an eye by pliers, and the eyes are placed over the adjacent hooks of the bolts. The turnbuckle frame is then turned to obtain the desired tension. The splicing wires *a* are then passed through the channels in the shanks of the bolts and through the head of the hook and engaged with the eyes of the wire ends, the splice wires thus forming a connection between said ends. These splice wires are drawn tight, and a pin inserted through the openings in the longitudinal members 1, the shank of the pin passing between the spliced wires. The turnbuckle is then turned to twist the splice wires, so forming a secure connection between the wires to be joined and also tightening the splice wires and the joined wires as desired. During this operation the scissors brace is held so that the turning of the holts and the twisting of the wires *b* is prevented, the turnbuckle being the only member to turn.

Trolley Wheel and Finder.

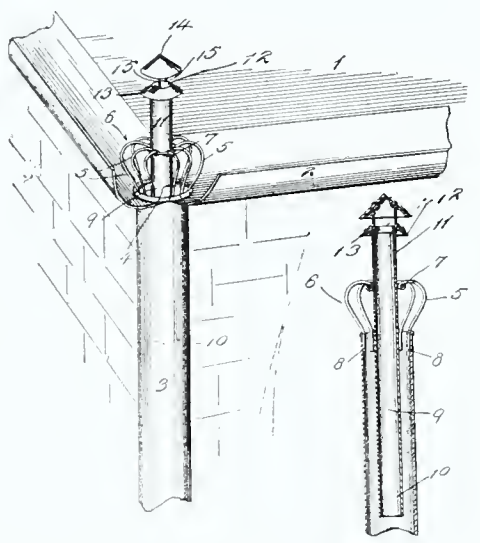
Great inconvenience is caused by the jumping of trolleys from the wire, and a device to prevent this has heen invented by Benjamin R. Beach, of Fieldshoro, N. J. It provides a finder which automatically returns the wheel when it misses the wire, and has an arrangement of spirally grooved rollers, which are longitudinally concaved to clear crossing wires. Guard rollers, as seen in the accompanying cut, are arranged on opposite sides of the trolley wheel, each roller is pro-



vided with an inwardly extending spiral groove 7, leading from the outer to the inner end thereof. Each roller is thickest at its inner end, where the roller contacts with the side of the wheel, and the spiral groove thereof communicates with the top portion of the groove, to lead the trolley wire thereto. The outer end of each roller is of smaller diameter than the inner end, but of greater than the intermediate part of the roller. Each roller has its periphery longitudinally concaved, the roller being of smallest diameter at a point intermediate its ends and gradually increasing in diameter toward its opposite ends. In this way a longitudinal curvature is provided in each finding and guard roller, which adapts it to pass under crossing wires and other fixtures in the trolley line without coming in contact with any part of the overhead structure. The outer flanges of the convolutions of the spiral groove of each roller are bent inward toward the wheel 5 so as to partially overhang the adjacent convolution. These flanges are thus adapted to act as retaining hooks to hold the wire falling into any convolution of a spiral groove against jumping out, thus preventing the trolley as a whole from jumping out. In the revolutions of the trolley, the wire is fed in by the spiral groove until restored to the groove in the trolley wheel.

Conductor or Drain Pipe.

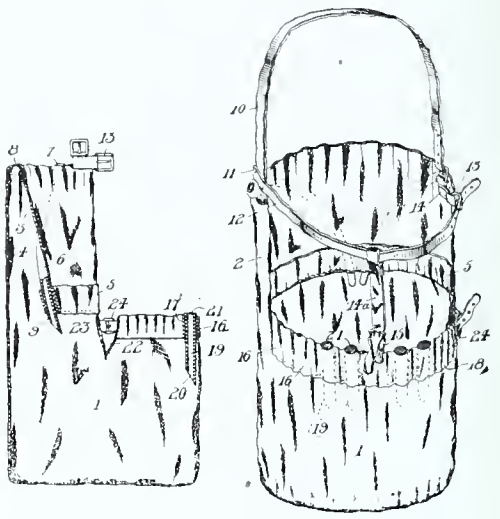
Frozen drain pipes represent one of the most serious annoyances to which householders are subjected, and a recent invention for preventing the freezing of the same should be popular. It is by William Herman Temme, of New Kensington, Pa., and is shown in the accompanying cuts. It will he seen that the drain pipe has a strainer at its upper opening, the strainer consisting of a cage made of spring arms secured to a ring at their upper ends, the lower ends of the arms holding the strainer in the opening. A ventilating pipe passes through the ring and is held by the spring arms in a position to provide for the passage of water from the gutter of the house



into the drain pipe around the sides of the ventilating pipe. Its position also prevents the entrance of the drain pipe from becoming closed by any foreign substance, such as leaves, etc. The upper end of this pipe 9 extends above any possihle snow line, so that the upper end thereof will always be open and free. A shield 13 is secured to the mouth of the ventilating pipe, and a cap is placed over the mouth. When the upper end of the drain pipe is closed hy snow, the latter freezes and chokes the pipe. By means of the new device, there will be a constant draft passing through the drain pipe, which cannot in any way become cut off, and this draft through the ventilating pipe prevents any choking of the pipe by freezing of water or snow. The strainer which supports the ventilating pipe prevents foreign matter from entering, as already noted.

Horse Feeding Bag.

A convenient and practical feed bag for horses has been recently patented by Ferencz Toth, of Zanesville, Ohio. As seen in the drawings, the bag has a semicylindrical extension, 2, bent upon itself to provide a flap and also a pocket 4. The flap is reinforced by stay pieces which serve as connections for ventilating tuhes 6, which project



into the air. Each of these tubes depends below the flap and opens into the upper part of the body portion. Other stay pieces on the top of the bag couple thereto vertical ventilating tubes 19, which open into the body and communicate at the other end with the air. The upper ends of these tubes are provided with screens, to prevent the feed from entering. Straps are provided to secure the bag in position upon the horse's head, and to secure the body of the same tightly in place, to prevent accidental spilling of the feed therein. It will be seen that this device is very simple and can be easily and cheaply manufactured, while at the same time it provides efficient ventilating means. Most feed bags are either solid, so that the horse cannot breathe while he is eating, or they have the ventilating device at the bottom, where it is choked up with the feed until the animal has eaten most of the latter. The new device is a decided improvement on such constructions.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

MODEL BOTTLING MACHINERY CO. v. ANHEUSER-BUSCH BREWING ASS'N.

(Circuit Court of Appeals, Eighth Circuit Sep. 18, 1911. 190 F. R. p. 573.)

1. PATENTS — ANTICIPATION — APPARATUS FOR PASTEURIZING BEER.

The Wagner patent, No. 607,304, for an apparatus for pasteurizing beer, which consists of endless chains having receptacles for conveying bottles of beer through a tank with compartments containing water of different temperatures, is void for anticipation by the apparatus of the Leach British patent, No. 5,065, of November 19, 1881, for curing fish, which employs the same mechanical combination for a similar purpose in an analogous act.

2. PATENTS-ANTICIPATION-DATE OF APPLICATION FOR PATENT.

An application for a patent for a process cannot be considered, for the purpose of the question of anticipation, a continuation of a prior application for a patent for a machine for carrying out such process, which, although disclosing the process, did not claim it.

3. PATENTS—ANTICIPATION — PROCESS FOR PASTEURIZING BEER.

The Wagner patent, No. 768,550, for a process for pasteurizing beer, is void for anticipation by the Pindstofte German patent, No. 89,691 of December 9, 1896.

4. PATENTS—ANTICIPATION—PROCESS.

It is not necessary, to constitute an anticipation of a process patent, that the two processes should be identical in all particulars: but it is sufficient if in general aspects they are the same, and the difference in minor matters is only such as would suggest itself to a person possessing ordinary skill in the art.

5. PATENTS—ANTICIPATION—PROCESS.

A patent for a process may be anticipated by a prior patent for a machine which fully discloses such process

INDIANA MFG. CO. v. NICHOLS & SHEPARD CO.

(Circuit Court, E. D. Michigan, S. D. Nov. 14, 1910. On Exceptions to Answer and Motion to Strike out Cross-Bill, May 26, 1911. 190 F. R. p. 579.)

1. PATENTS--RIGHTS OF LICENSEE—SALE IN VIOLATION OF CONDITIONS.

Where a license under a patent entitling him to use a patented machine under certain conditions only, undertakes to use the machine otherwise than in conformity with such conditions, he loses the protection of his license, and is liable as an infringer.

2. PATENTS—LICENSE—CONDITIONS

Where a license, authorizing defendant to use certain patents, provided that defendant should maintain specified prices and should place certain trade-mark plates on each machine containing any of the patented improvements, and that it should also make reports of sales and pay money for royalties, provisions as to the maintenance of prices and the application of trade-marks operated as conditions to defendant's right to use the patent, though not so as to the provisions for reports of sales and for payment of royalties.

3. PATENTS — LICENSES — VALIDITY—CONDITIONS—PRICE RESTRICTION.

A price restriction in a patent license is a valid condition.

4. SPECIFIC PERFORMANCE-PATENT LICENSE —CONDITIONS.

Where a license to manufacture and use patents in the construction of certain machines, contained conditions that certain sets of labels, furnished by the licensor, and embodying his trade-mark, should be affixed to every machine made under the license, and that the licensee should maintain a specified schedule of prices, such covenants were affirmative in character and proper subjects of a bill for specific performance.

5. PATEETS— LICENSES—VIOLATION—ELECTION OF REMEDIES.

Where a patent licensor conceives that the licensee is operating outside the agreed field, the licensor may elect to disregard the license and sue for infringement, or, if he can show that he has not sufficient legal remedy, he may sue in equity for specific performance.

6. COURTS-FEDERAL COURTS-JURISDICTION.

A bill for infringement of a patent presents a controversy under the laws of the United States within the jurisdiction of the federal courts, regardless of citizenship, while a bill for specific performance of a patent license can only be maintained in a federal court in a case the requisite diversity of citizenship appears.

7. PATENTS—LICENSE—ESTOPPEL.

Where a patentee licenses the use of the invention, the patentee may not deny the licensee's right to act under the patent, nor may the licensee dispute the validity of the patent within the scope of the license, but the patentee cannot sue the licensee for infringement on the ground that he is operating outside the conditions of the license and at the same time claim that the licensee, by reason of the license, is estopped to dispute the validity or effect of the patent.

8. SPECIFIC PERFORMANCE-PATENT LICENSE —ADEQUATE REMEDY AT LAW.

Where a license to embody patents in certain machines provided that the licensee should maintain a specified schedule of prices and that none of the machines containing the inventions should go into the market unless branded with the patentee's trade-marks, etc., the patentee had no adequate remedy at law for a violation of such conditions, and was therefore entitled to sue for specific performance.

9. SPECIFIC PERFORMANCE—ADEQUATE REMEDY—DAMAGES—PENALTY.

A license to use patents in certain machines contained conditions as to the manner of use, and declared that, on the licensee's failure to attach the patentee's labels to machines containing the inventions, it should pay the licensor $100 as liquidated damages "now estimated, determined, and agreed upon." Held, that such clause provided for a penalty and not for liquidated damages, and that its presence in the contract did not conclusively establish that the patentee had an adequate remedy at law sufficient to preclude specific performance.

VANDERBILT v. AMERICAN CAR & FOUNDRY CO.

(Circuit Court, D. New Jersey. June 30, 1911. 190 F. R. p. 588.)

1. PATENTS—INVENTION—TANK CAR.

The Vanderbilt patent, No. 678,597, for a tank car, claim 54, which covers a tank car having a running board along the top of the tank, with a stair leading from such board to the platform of the car, is void for lack of patentable invention.

2. PATENTS—INVENTION—TANK CAR.

The Vanderbilt patent, No. 747,278, for a tank car, claims 1, 2, 3, 12, 13, 14, 15, 18, 19, and 20, are void for lack of patentable invention; also held not infringed if conceded invention.

HOLEPROOF HOSIERY CO. v. WALLACH BROS.

(Circuit Court, S. D. New York. Jan. 14, 1911. 190 F. R. p. 606.)

1. TRADE-MARKS AND TRADE-NAMES—DESCRIPTIVE TERMS — "HOLEPROOF" HOSIERY.

The word "Holeproof," as a trade-mark for hosiery, is not invalid as descriptive where it has been used and advertised for such length of time as to have acquired a secondary meaning as designating the product of a particular maker.

2. TRADE-MARKS AND TRADE-NAMES—INFRINGEMENT.

The arbitrary name "Knotair," as applied to a make of hosiery, is not in itself an infringement of the trade-mark "Holeproof," previously adopted by another manufacturer.

3. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION.

Complainant made and sold hosiery under the trade-mark "Holeproof" in specially designed and colored boxes, each containing six pairs, and when sold by the box, with a guaranty of replacement if holes appeared therein within six months, which was novel and widely advertised. Defendant, which as a dealer had been selling complainant's product, became agent for a different make sold under the name of "Knotair," which it had put up in boxes and with a dress closely resembling those of complainant, and advertised and sold with a similar guaranty, and to customers who called for "Holeproof," although not actually representing it to be such. Held, that such acts evidenced an intention to obtain an advantage from the advertising and popularity of complainant's goods, and constituted unfair competition, which would be enjoined.

PELTON WATER WHEEL CO. v. DOBLE.

(Circuit Court of Appeals, Ninth Circuit. Oct 9, 1911. 190 F. R. p. 760.)

1. PATENTS—VALIDITY AND INFRINGEMENT HYDRAULIC NOZZLE.

The Doble reissue patent, No. 12,460, for an improvement in nozzles for impact water wheels, was not anticipated, covers a true combination, and discloses patentable invention; also held infringed.

2. PATENTS—PATENTABLE COMBINATIONS—ESSENTIALS.

It is not necessary to constitute a patentable combination that each element in performing its own function shall also modify the function performed by the others, but it is generally sufficient if there be such coaction that a result is produced which is new, and the result is new if it is substantially a better result than that which has been accomplished by other combinations.

3. PATENTS — PATENTABLE COMBINATIONS.

That there is novelty in one of the elements does not justify a claim to a patentable combination of the elements, unless there is coaction between them to produce a new result, but a combination is not unpatentable merely because the result might have been accomplished by other combinations.

LOUIS DEJONGE & CO. v. BREUKER & KESSLER CO.

(Circuit Court of Appeals, Third Circuit. Nov. 6, 1911. 191 F. R. p. 35.)

1. COPYRIGHTS—PERSONS ENTITLED TO PROTECTION — NECESSITY OF STRICT COMPLIANCE WITH STATUTE.

Protection under the copyright law is granted only to those who perform the conditions essential to a perfect copyright title.

2. COPYRIGHTS — INFRINGEMENT—PERSONS ENTITLED TO MAINTAIN SUIT.

Under Rev. St. § 4952 (U. S. Comp. St. 1901, p. 3406), which gives to the author or proprietor of a painting, upon compliance with the provisions of the copyright law, the sole liberty of copying and vending the same, and Act June 18, 1874, c. 301, § 1, 18 Stat. 78 (U. S. Comp. St. 1901, p. 3411), which provide that no person shall maintain an action for infringement of his copyright of a painting, unless he shall inscribe a notice of the same "on some visible portion thereof or of the substance in which the same shall be mounted," construed together, a single notice on a sheet containing a dozen copies of a copyrighted painting is not such a compliance with the statute as will sustain a suit for infringement.

T. B. WOOD'S SONS CO. v. VALLEY IRON WORKS.

(Circuit Court, M. D. Pennsylvania. Oct. 19, 1911. 191 F. R. p. 196.)

1. PATENTS-VALIDITY AND INVENTION—SHAFT HANGER.

The Wood patent, No. 790,609, for a shaft hanger, was not anticipated, and discloses patentable novelty and invention. Also held infringed.

2. PATENTS — INVENTION AND ANTICIPATION—PRESUMPTIONS AND BURDEN OF PROOF.

A patent implies novelty and invention, and the burden of proof rests upon one attacking its validity to establish anticipation or lack of invention beyond a reasonable doubt.

3. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION.

A case of unfair competition is not made out where there is no evidence of an intention to defraud or deceive on the part of defendant and the resemblance between his product and complainant's is not such as to deceive the class of persons who buy such products.

CENTURY ELECTRIC CO. v. WESTINGHOUSE ELECTRIC & MFG. CO.

(Circuit Court of Appeals, Eight Circuit. Nov. , 1911. 191 F. R. p. 350.)

1. PATENTS—ANTICIPATION—APPLICATIONS PENDING TOGETHER.

Where each of several applications, which subsequently ripen into patents to the same inventor, describes the same machine and process and the inventions claimed in all the applications, but no one of the applications claims any invention claimed in any of the others, and they are all pending at the same time, the respective dates of the applications and of the patents and the respective dates when the applications were filed are immaterial, and the applications and patents cannot be used to anticipate or avoid each other.

2. PATENTS-ANTICIPATION-PRIOR PATENTS-IDENTITY OF INVENTION.

While an earlier patent avoids a later patent to the same patentee for the invention claimed and secured by the former, it does not invalidate a later patent to him for a distinctly different invention not claimed and secured by the earlier patent, whether that invention is general or specific, is of a process or a machine, or of both, and whether it is of an original machine or process, or of an improvement thereon.

3. PATENTS—INVENTION—NUMBER OF PATENTS PROCURABLE.

One who makes several patentable inventions that produce a new and useful process or machine, or both, pertaining to the same subject-matter, has the option to take one patent therefor or as many separate patents therefor as he makes patentable inventions.

4. PATENTS — CONSTRUCTION — NATURE OF PATENT—"CONTRACT."

A patent is a contract, and it must be interpreted by the same rules of construction as other contracts.

5. PATENTS — CONSTRUCTION — SPECIFICATIONS AND CLAIMS—CONSTRUCTION AS A WHOLE.

The intention of the parties should be deduced from the entire contract, not from any part of it, or without any part of it.

The specification which is a part of the same application and specification as are the claims must be read and interpreted with them, not for the purpose of contracting or of expanding the latter, but to ascertain from the entire agreement the actual intention of the parties, and that intention when ascertained should prevail.

6. PATENTS—INVENTION — PROCESS AND APPARATUS.

Separate patents for a new and useful process and for a new and useful apparatus to practice it may be sustained, although no other apparatus to practice it is known.

7. PATENTS — ANTICIPATION — PARTICULAR PATENTS.

Patent No. 555,190 to Tesla, for a combination or apparatus to practice the process secured to Tesla by patent No. 511,915, is not anticipated or avoided by the latter.

Patents Nos. 555,190 and 511,915 are not for the same invention as patent No. 445,207 to Tesla, and neither of them is anticipated or avoided thereby.

8. PATENTS—INFRINGEMENT-PRESUMPTIONS —DECISION OF PATENT OFFICE.

It is a general rule that there is a legal presumption that a process or apparatus of a later patent does not infringe upon that of an earlier patent relating to the same subject.

It is a general rule that a process or apparatus of a later patent does not infringe the process or apparatus of an earlier patent where the Commissioner has decided there was no interference between them.

There is an exception to this rule to the effect that where a patentee has made a primary invention of a new or useful process or apparatus which accomplishes a result never before produced by such a process or machine, the presumption that a process or apparatus of a later patent on the same subject is for a subordinate improvement or modification of the primary invention and hence subject to an infringement of the patent which secures it, is at least as strong as the presumption of the general rules, because there are many more patents for subordinate improvements and modifications of primary inventions than there are for such inventions, and hence more probability that a given process or apparatus is of the former than that it is of the latter class.

9. PATENTS—INFRINGEMENT—DEFENSES.

It is no defense to a charge of infringement of a process, an apparatus or a combination clearly described and claimed in a patent that it, or some part of it, was misnamed therein by the patentee, or that the infringer has called it by a different name. Patents protect processes, apparatus, and combinations, whatever their names.

10. PATENTS—INFRINGEMENT—PARTICULAR PATENTS.

Claim 1 of patent No. 511,559, claim 1 of patent No. 511,915, and claims 1, 2, and 6 of patent No. 555,190 to Nikola Tesla regarding electrical transmission of power, are valid, and the defendant's device which it claims follows the combinations secured by the patent No. 399,801 to Thomson & Wightman, and patent No. 428,650 to Thomson, is an infringement thereof.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

William S. Butler, Duluth, Minn. Flour Sifter.—The object of the invention is the provision of a simple and inexpensive sifter adapted for domestic use, and which may be operated conveniently by a single hand or with either hand. The invention consists in providing a casing, which is in the form of the ordinary flour scoop, with a reciprocating stirrer arranged at one side of the wire screen. To the casing is attached a handle which is disposed parallel therewith. A reciprocating member is mounted vertically in the handle and is spring-actuated, and is connected with the stirrer by an angle lever. A thumb plate is provided at the upper end of the reciprocating member above the handle. By pressing upon the thumb plate with the thumb of the hand which grasps the handle of the sifter, the stirrer within the scoop may be reciprocated so as to sift the flour.

John F. Brent, Chicago, Ill. Hinge for Display Boxes.—The invention is specially designed for use in connection with cracker boxes. The object is to provide a novel construction of detachable hinges, which can be readily applied to or detached from the detachable glass front of a cracker or other display box. A further object is to associate with the hinge certain means for holding open the upper hinged section of the detachable front. The invention consists of a display front for boxes comprising upper and lower hinged sections, a spring hinge connecting the sections and including two leaves, one of the leaves being rigidly secured to the lower section of the front, while the other leaf is provided with means for detachably engaging one end of the box for removably securing the lower section of the front to the cracker box. Means are carried by the upper section so as to co-operate with the lower leaf for holding the upper section of the front in an open position.

Carwin Linder, Converse, S. C. Planter.—This invention relates to combined planters and fertilizer distributers, and is an improvement on a patent issued to the same patentee May 25, 1909. The object of the invention is to provide a seed dropping mechanism, which will operate with very little friction, is of simple construction, and will operate positively to feed the seed to the seed dropping device. A further object is to provide a seed dropping mechanism embodying a supplemental or removable hopper, which may be easily fitted within or taken from the main body or hopper of the planter, when it is desired to clean or repair the operating parts. The invention consists of a main body or hopper, a driving shaft mounted longitudinally therein, means for rotating said shaft, a dropping wheel on the rear end of the said shaft at right angles thereto, and a supplemental hopper removably suspended on the sides of the main hopper and arranged transversely therein and having its bottom plate fitting over and against the sides of the dropping wheel above the driving shaft.

John Archdeacon, Carlisle, Ky. Hand Street Oiler.—It is the aim of the present invention to provide a hand sprinkling apparatus, designed primarily for sprinkling streets, roads, and the like with oil, but adapted for spraying other liquids. The apparatus enables oil to be sprinkled from a barrel without waste and with a minimum amount of labor, and it is adapted to form a skid to permit a barrel of oil to be readily rolled onto it. It is equipped with means for controlling the flow of oil from the barrel, and also to adapt the apparatus for handling various kinds or grades of oil. The apparatus comprises in its construction a truck provided with an axle, opposite longitudinal barrel supporting bars secured to the axle and having concave upper faces to form a seat for a barrel, a tongue centrally connected with the axle between the barrel supporting bars to form a skid, and a receptacle hung from the axle and arranged to receive the contents of the barrel and provided with sprinkling means.

Delbert M. Paddock, Sidney, Ohio. Sidney Tool Co. assignee. Planer Attachment for Jointers—The purpose of the present invention is to provide an attachment adapted to be applied to a jointer for planing and sizing various kinds of timber to an even thickness, so as to accomplish the same results as are obtained by the use of a separate jointer and a standard pony planer. The planer attachment comprises in its construction a frame designed to be mounted on a jointer, lower power driven feeding means yieldably connected with the frame and designed to be located in advance of the cutting mechanism of the jointer, an upper vertically adjustable gage member located above the lower feeding means and above the cutting mechanism of the jointer to form a rigid guide for the material, and an upper idler feed roll carried by the gage member and located above the feeding means. When the planer attachment is placed upon the jointer, the gage devices of the latter are removed to clear the table for the reception of the attachment, and the material is run through the machine as often as it is necessary to reduce it to the desired size.

Alfred C. Getz, Sidney, Ohio. Universal Woodworking Machine.—It is the purpose of the present invention to provide a universal woodworking machine, adapted to permit the operation of its devices without dismembering the machine or removing the parts and substituting other parts for the same, whereby a plurality of operations may be simultaneously performed by individual workmen without one interfering with another. The machine is equipped with a jointer shaft extending entirely across the supporting frame and provided at the jointer side of the machine with the cutter head. The jointer table is composed of two sections located in advance and in rear of the cutter head and adjustable longitudinally of the machine. A vertically disposed shaper spindle operates through an opening in the rear section of the jointer table and is equipped with a cutter or shaping tool, adapted to be used either independently or simultaneously with the jointer. A circular saw operates through an opening in the saw table arranged at the inner side of the front section of the jointer table and carried by the same. When it is desired to use the circular saw for cutting or ripping, the saw carrying frame is moved upwardly to raise the saw to its operative position, and when not in use the circular saw is dropped below the saw table. A horizontal boring spindle is located at the opposite side of the machine from the cutter head of the jointer shaft, and the machine is equipped at one end with a band saw, the frame of which is formed integral with the frame of the machine. The jointer shaft is provided at the end opposite that at which the cutter is arranged with a hollow mortising chisel, and the boring shaft is equipped with a chuck or head for holding an auger or analogous tool. The work to be operated on is placed upon a work holder which is slidably mounted on a vertically movable carriage. The machine will admit of four workmen using it, one at the band saw, one at the circular saw, one at the jointer, and one at the mortising or boring tool, without interfering with one another. The integral character of the frame of the band saw insures perfect steadiness and stability and thereby enables a practical band saw to constitute a part of the universal woodworking machine. Various rotary devices, such as a grind stone, a disk sander, and the like may be mounted on the jointer shaft and used in connection with the slidable work holder, and the latter may be readily detached to permit a felly rounder or other device to be applied to the machine at that end of the jointer shaft.

Richard B. H. Leighton, Chattanooga, Tenn., and Victor W. Zilen, Richmond Hill, N. Y. Two pats.—The object of the invention of the first patent is to provide a car coupling, adapted to meet the present requirements of the Master Car Builders Association. It is capable of automatic coupling, and it is equipped with a lock set for enabling it to be arranged for automatic coupling. The knuckle locking mechanism is adapted to be readily connected with an operating device, located at either the top or right hand side of a freight car, or the left hand side of a passenger coach. The car coupling comprises a vertically movable locking pin operable in the draw head and provided at its upper portion with a head and having a lower shank portion, a spring engaging the locking pin and arranged to urge the same downwardly, a relatively fixed lock set seat for supporting the locking pin in an elevated position, and a pivoted knuckle having an arm arranged to strike the locking pin to move the same out of engagement with the lock set seat.

The device of the second patent, which is designed to be used in the car coupling of the first patent, is adapted to open the pivoted knuckle automatically when the same is free to move outwardly. It comprises in its construction a draw head having grooves, a coiled spring provided at its inner end with a loop and having its outer end engaging the knuckle, and a pin removably arranged in the said grooves and engaging the loop of the spring. The outer terminal of the spring is provided with a projecting lug, which operates in an arcuate slot to limit the movement of the free end of the spring.

Simon J. Harding, West Baldwin, Maine. Washing Machine. — The present invention relates to that class of washing machines, which are equipped with a pump for discharging water upon the rubbing mechanism and the clothes during the operation of washing, and it is the aim of the present invention to control the operation of the pump and limit the same to the time when the rubbing mechanism is operating on the clothes, so as to prevent the pump from splashing water when the movable part of the mechanism is swung back to permit the clothes to be placed in and removed from the machine. The rubbing mechanism is adapted to be arranged out of the way, and the tub or receptacle, in which the machine is placed, is fully exposed, and the pump mechanism is equipped with means for draining it to avoid dropping water upon the floor while removing the machine from the tub, and to permit the parts to dry thoroughly to prevent rusting.

Theodore E. Lutz, Galion, Ohio. Adjustable Crank Attachment.—The crank attacbment, which is designed particularly for use in connection with the operating mechanism of railroad signals, and the like, may, however, be employed in any operating mechanism where it is desired to transmit the throw or motion of an actuating lever and change the direction of the transmitted motion. It is adapted to be substituted for an ordinary bell crank lever, and it enables the precise throw or movement of the operating lever to be accurately maintained at all times. The device comprises a lever pivoted at an intermediate point and having one of its arms pivotally connected to one of a pair of angularly related connecting rods, an oscillatory member connected to the other rod and pivoted to the other arm of the lever, one of the parts forming a casing in which the other part has a limited independent movement, and adjustable means located at opposite sides of the casing for limiting and varying the independent movement of the oscillatory member.

Newton W. Lyon, Garden Grove. Iowa. Shock Carrier. — The shock carrier, which is an improvement on a previous patent obtained by this inventor, is equipped with mechanism for utilizing the tractive force, by which the carrier is hauled over the field, to tighten a binder rope or chain, which encircles the shock, whereby the latter is securely held on the carrier and is at the same time compressed into compact form. The shock carrying device consists of a frame having a platform, a winding shaft arranged beneath the platform, and binding and traction ropes attached to the shaft and adapted to be wound thereon in opposite directions, whereby when traction is applied to haul the frame, the binding ropes will be wound around the shaft and tightened.

Santa E. Nelson, Kennett, Cal. Two patents.—The first patent covers a rail joint equipped with means for preventing excessive creeping of the rails, and also for retaining the cross ties in proper position with relation to the rail joint, and for positively locking the nuts of the bolts thereof from accidental rotation, so that the nuts will not have to be screwed so tight that the threads of the bolts will be subjected to undue strain. The nut locking mechanism is adapted to be moved away from a nut by a wrench in the ordinary use of the same, so that the bolts may be tightened, or loosened, or a bolt replaced without removing or changing the nut locking means. The rail joint consists of a base plate provided with flanges for engaging the cross ties, a relatively fixed fish plate formed integral with the base plate at one side thereof, a removable fish plate located at the opposite side of the base plate, bolts connecting the fish plate and provided with nuts, a plurality of spaced supports formed on one of the fish plates, and a resilient key arranged on the supports and presenting resilient portions to the nuts to lock the same against rotation, said resilient portions being adapted to be forced away from the nuts by a wrench or other tool.

The second patent covers anti-creepers for rails, and the invention has for its object to provide a boltless and wedgeless anti-creeper adapted to be easily made and capable of being readily applied without change to rails of different sizes. It is capable of firmly gripping a rail and of engaging a cross tie to prevent the rail from sliding downward on a grade. The anti-creeper consists of a single continuous strip of resilient metal, and comprises a depending loop located beneath the rail, and engaging portions extending from opposite sides of the loop and arranged to grip the base of the rail at opposite sides thereof and maintained in engagement solely by the gripping action of the said loop.

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FOR SALE—Patent No. 1,014,504, dated Jan. 9, 1912. A pair of pipe-clamps, now in use. A success guaranteed. Address, S. G. Miller, Russell, Kansas. jy

FOR SALE—Patent No. 1,014,561, dated Jan. 9, 1912. Torpedo Placing Machine. Can't miss placing torpedo while train runs at any speed. Address, J. D. Bell, Box 122, Arcadia, Kansas. jy

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FOR SALE—Canadian patent on Automatic Copy Holder for type writing machines. For detailed description see Inventive Age of May 1911. Cole & Fortney, Kingwood, W. Va. jun

FOR SALE—Patent No. 1,014,117. Either outright or on a royalty basis. A good safety automatic railway crossing alarm, operated by rolling stock. Address, A. T. Cabeen, R. No. 1, Stuttgart, Ark. jun

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FOR SALE—Patent No. 1,006,507, dated Oct. 24, 1911. Expansion Joint. Expands freely under high pressure with unlimited traverse. Been in practical use since September 1910. Address, C. R. Speight, Burgaw, N. C. mar-13

WANTED.

WANTED—To correspond with rule manufacturers with regard to manufacturing "The Best True Bias Gage" (recently patented.) This square and rule combined is for the use of dry goods or carpet firms, dressmakers, milliners, tailors, etc. Address, N. A. Morse, No. 916 W. Third St., Abilene, Kansas. aug

WANTED—A company to manufacture my suspended tramway, patent No. 992,672, on royalty basis. Indispensable in mercantile establishments for conveying goods. Saves labor, reduces expense, increases speed, and prevents breakage. Address, Patrick Killpatrick, Huron, S. D. jun

WANTED—To correspond with manufacturers regarding the manufacture and placing on the market of a meritorious and useful celluloid article having practically an unlimited field for its operation. Address, P. O. Box 355, Wilber, Nebr. jun

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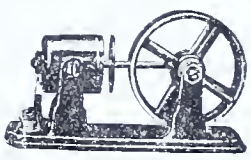
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Entered at the Post-office as 2nd class matter.

WASHINGTON, D. C., JUNE 1, 1912.

WHAT ONE JUDGE THINKS.

It is a well known fact that the majority of federal judges dislike patent cases, this being due to the fact that they open up a field of study which is new to them, and require, in many instances, considerable work to make an intelligent investigation. For instance, a judge may have before him one week a patent case bearing upon electricity, another week a patent case relating to chemistry, and another week a patent case dealing with harvesting machinery. In patent cases, the testimony is usually quite voluminous and is made up principally of the opinions of the patent experts. In chemical and electrical cases particularly, the terms and expressions are difficult for a layman to understand, and yet the judge must dig into the case and fathom it in order to render a decision.

They do things differently in Germany. In that country the court summons technical judges to whom the technical questions of the case are submitted, and who can intelligently pass upon the issues. For instance, if there is a patent case before a German court dealing with chemistry, the court, being unlearned in the art of chemistry, will summon technical experts, who are not paid for either by the defendant or the complainant, but who are absolutely unbiased, and who by their advice and counsel assist the court in reaching a definite conclusion in the case. In this country the complainant employs an expert, paying him from fifty to one hundred dollars a day, to testify that the defendant's machine is an infringement of complainant's patent. The defendant employs a similar expert to testify that the complainant's expert is wrong and that the patent of complainant is not infringed. Both of the experts are usually men of learning and ability. Between these two opposing opinions, the judge, who is unskilled in mechanics, chemistry or electricity, is supposed by some system of legerdemain to find out the truth, and then so decide the case. Many judges have commented upon the practice and have argued against its continuance. It remained, however, for Judge Hand, of the U. S. Circuit Court for the Southern District of New York to point out in very striking language the absurdity of the situation. The case was Parke-Davis & Company vs. H. K. Mulford Co., and involved the Takamine patent for a substance called "Adrenalin." Naturally the case required a good deal of study, and the decision of the judge is contained in twenty printed pages of a recent issue of the Federal Reporter. At the conclusion of the decision the court said:—

> "I cannot stop without calling attention to the extraordinary condition of the law which makes it possible for a man without any knowledge of even the rudiments of chemistry to pass upon such questions as these. The inordinate expense of time is the least of the resulting evils, for only a trained chemist is really capable of passing upon such facts, e. g., in this case the chemical character of Von Furth's so-called "zinc compound," or the presence of inactive organic substances. In Germany, where the national spirit eagerly seeks for all the assistance it can get from the whole range of human knowledge, they do things quite differently. The court summons judges to whom technical questions are submitted and who can intelligently pass upon the issues without blindly groping among testimony upon matters wholly out of their ken. How long we shall continue to blunder along without the aid of unpartisan and authoritative scientific assistance in the administration of justice, no one knows; but all fair persons not conventionalized by provincial legal habits of mind ought, I should think, unite to effect some such advance."

Judge Hand has rendered a signal service by calling attention anew to this matter, but it should not stop there. Steps should be taken to inaugurate in this country a system that will strengthen the administration of justice in patent cases. As it is now, the judge hearing a technical case involving electricity or chemistry, is at the mercy of the litigant having the shrewdest lawyer, and often injustice is done to one side or the other. A system which would surround the judge with technical assistants of proved ability to whom the matter could be referred for decision on the technical questions involved, would help materially towards reducing the expenses of patent litigation, and would certainly tend towards greater uniformity of decisions.

OMISSION OF PATENTEES' ADDRESSES FROM THE PATENT OFFICE GAZETTE.

As is well known, the U. S. Patent Office prints each week the Patent Office Gazette, in which is contained one of the figures of the drawing, as many as five of the claims appearing in the patent, (if the patent contains that number of claims) the name and address of the patentee and the number of the patent. This Gazette is circulated widely, and is the means by which attorneys, patent sales agents, and others who may wish to get in communication with the patentees, are enabled to do this. This publication of the inventor's patent in the Gazette is of considerable advantage to him, and it is likewise a disadvantage. It is a question whether one offsets the other. It has been suggested that the addresses of the patentees should be withheld by the Patent Office, with a view of preventing swindlers of every stripe from communicating with the patentees. It would certainly be a most effectual method of dealing with the problem, for without the Patent Office Gazette as a source of information, the dozens of patent salesmen, and the men who prey on inventors, would have no means by which they could get in touch with the patentees. Not having the names and addresses of the patentees, they would be compelled to go out of business, for it would be too expensive a proposition to purchase copies of every patent issued, since there are usually from 500 to 700 each week.

It is not generally known that the English Patent Office, being confronted with the same problem some years ago, stopped the practice of printing the addresses of the patentees in their patent journal. Evidently they have their patent swindlers over in England just as they have them here, though possibly not to the same extent, for it could hardly be as bad anywhere as it is in this country. One would think that the plan of withholding the addresses of the patentees would be satisfactory to the inventors, but at a recent meeting in London of inventors and others interested in patents, with a view of forming a permanent home for inventors, it was pointed out that the omission of the addresses from the English patent journal had the effect of making it difficult for real, bona-fide purchasers of patents to communicate with the patentee, for it necessitated writing to the Patent Office for the purpose of obtaining a copy of the patent before the address of the patentee could be secured. However, we think that this is a small objection, and we really cannot see at this time any serious obstacle to the plan of withholding the addresses in the Patent Office Gazette, or from the English patent journal. It would, of course, stop inventors from getting a great many circulars from patent attorneys and a horde of other communications, which tend to inflate the inventors' minds with the importance of their inventions, but it would not prevent a bona-fide purchaser of the patent from getting in touch with the patentee; for he could, by sending to the Patent Office for a copy of the patent, learn the address of the patentee and thus open up communication with him. Nor would anyone buy a patent without first examining a copy of the same.

Of course, there would be some people who would not be satisfied with the plan, but on the whole it seems to us that it would go far towards accomplishing the desired result of stopping the operations of the patent sales agents who prey upon the stupidity and credulity of inventors.

THE INVENTORS PROTECTIVE ASSOCIATION.

We are in receipt through one of our correspondents of a circular sent out by the International Inventors' Protective Association of Baraboo, Wisc. It appears from the literature that this association has a president and a secretary. They are sending broadcast through the mails, circulars inviting inventors to become members of the association for the sum of $5. Among the advantages of becoming a member they place as first and foremost the following:—

> "Upon becoming a member of the association you are furnished a certificate of membership, and a button indicative of the order, which in itself is something of which to be proud, and stamps the owner as a man above the ordinary."

While the circular mentions seven other articles which make membership in the association a matter of sufficient importance to the inventor for him to invest the sum of $5, the fact that they place this one first, indicates that they expect that it will rivet the attention and accomplish the desired end. We do not know what inventors may think of this proposition, but to us it sounds a good deal like tommy-rot. If inventors are taken in by such a circular, surely they must have more money than brains, for what possible advantage is it to an inventor to sport around a button of this order, when no one knows what the association is? The men back of this association must have a very poor opinion of the average inventor. They surely cannot think that all an inventor wants is a certificate of membership and a button, after investing the sum of $5. Some inventors may be credulous, stupid and vain, and the association may find enough of that kind to pay them for continuing the mailing of the circulars, but they will have to make a better showing than they have presented before we would recommend any of our readers to have any dealings with them. There is a real necessity for a bona-fide association of inventors, but such an association must be formed for the benefit of the membership of the association generally, and not to profit one or two individuals backing the scheme.

Inventors Filing Their Own Applications.

We are informed that never before in the history of the Patent Office have so many inventors filed their own applications. Apparently, because they have been swindled or robbed by some attorneys, they have decided to dispense with legal assistance altogether in filing their applications for patent. Two cases came under our notice quite recently which illustrate the lack of wisdom displayed by such inventors. They had filed applications for patents on inventions which were clearly no patentable. They had spent not less than $15 to file their applications, and on the first official action they were informed by the Patent Office Examiner that their inventions were anticipated by prior patents, the data of which was given and which could have easily been obtained before the cases were presented. Had they employed an attorney to make a search of the records of the Patent Office in the first instance, and paid that attorney the sum of $5, they would have saved at least $10. No attorney thinks of filing an application for patent without making a search of the records of the Patent Office to determine the patentability of the invention. Not that the examination is conclusive on the subject, for it is well known that it is not; but it is a fact nevertheless, that about two out of every five searches that are made disclose anticipating patents, and it is not unusual for an attorney to report fully two-thirds of the cases presented to him to be unworthy of applications for patents. Yet, if applicants always file their applications instead of seeking the assistance of attorneys, they would in each instance lose $15, for that is the government fee which must be paid on the presentation of the application. We hazard a guess that every day there are applications filed by inventors on devices which are clearly not patentable, and on which, if they had had the good sense to have the records investigated by a proper patent attorney, they would have been advised not to apply for patents. We suppose that no amount of advice will change the practice, and that inventors will continue to spend their money foolishly by applying for patents in their own names without securing the assistance of competent counsel. Nevertheless, we feel it our duty to state the facts, and hope that it may deter a few from pursuing this course.

Factors in Foreign Trade.

The Bureau of Manufactures now has in press a bulletin that will no doubt find a permanent place on the desk of every manufacturer interested in foreign trade. In its fifty-six pages will be found answers to questions asked by every manufacturer sending out trade literature or opening correspondence with foreign firms, for instance: What language is it best to use? In what currency and with what weights and measures should prices be quoted? What postage should be placed on the catalogue or the letter? Can I prepay a reply from the prospective customer? Is there a parcels post?

The bulletin answers these and other questions for each country in a concise manner. The reader can put his fingers on the information sought without hunting through a mass of detail that he does not want. Supplementing these statements are tables for converting the money of foreign countries into that of the United States; also a comparison of prices for countries in which both the monetary unit and the units of weight and measure differ from those used in the United States. For example, the latter tables show the reader at a glance what is the comparative price per meter in Mexican currency of a cloth quoted at fifty cents per yard in United States currency; or the price per pound in United States money of an article quoted at 30 francs per kilo in French currency.

Currency conversion tables and price comparisons are given for over 30 countries. Foreign postage rates and the parcels-post regulations are summarized, and a list is given of the countries in which international reply coupons are valid.

Copies of the bulletin, which is entitled "Factors in Foreign Trade" will be available for distribution at an early date, and those desiring it should make application to the Bureau of Manufactures, Department of Commerce and Labor.

Moving Pictures Among the Savages.

An interesting tale of the use of moving pictures and their effect upon primitive man is related in a recent issue of *Popular Mechanics*. A Chicago publisher penetrated into the jungles of central Africa, carrying with him a complete moving picture apparatus, including gas tanks for furnishing sufficient light to project the pictures. He and his party made friends with the inhabitants of a negro village, and one pitch black night the village chief and his subjects accepted an invitation to come to a moving picture show. The American, anticipating an interesting event, put up captive balloons, each with a camera attached, the camera pointing toward the screen that had been erected for the moving pictures. Three of these cameras were connected with one switch, and two with another, the whole being so arranged that, with the aid of a dry battery, turning the switch would not only open the shutters of the cameras but set off a large quantity of flashlight powder.

Some two hundred natives assembled before the screen, and the operator showed them reel after reel of films depicting life in the western world—steamships, railways, street scenes in New York, soldiers on the march, etc. Awe-stricken, the savages drank in this knowledge of a world that theretofore had been to them a mystery. When nearly all the reels had been run off, the publisher turned a switch and touched off the flashlights of three cameras. Two hundred yells escaped two hundred frightened throats, and then the American turned on the two remaining cameras. The negatives when developed showed, first, the natives gazing in open mouthed astonishment at the pictures on the screen: second, every man with his face buried in the dust, praying for mercy and convinced that the end of the world had come.

Trend of British Inventions.

By our own Correspondent.

The British Comptroller General of Patents, in his report for 1911, says that the ever-increasing importance of means of locomotion to the community in general is demonstrated by the prominence this subject takes under an analysis of the whole field of inventive activity. The internal-combustion engine, an important factor in the science of locomotion, is greatly in evidence, particularly in connection with the revolving-cylinder type, and the so-called "valveless" engine, in which puppet valves are dispensed with. Wheels for vehicles are a still more prolific source of invention. Motor vehicles and motor cycles maintain their claim to attention, variable-speed gearing, clutches, and engine-starting devices being especially noteworthy. Aeronautics show a considerable diminution in comparison with the previous year, but the number of applications is still sufficiently great to make the subject one of the features of the year's invention. It is interesting to note that efforts are being made to utilize aeroplanes as auxiliaries in naval warfare by contriving means for launching them from the decks of battleships. In view of the recent dispute in the taxi-cab industry, it is significant that many applications were received dealing with the registration of "extras."

In the textile industry the most noticeable feature of interest is the remarkable batch of inventions designed to obviate the objectionable habit known as "kissing the shuttle," that is, threading the weft by drawing or sucking it through the shuttle-eye by the breath. To avoid this, the shuttle is constructed so that it can be threaded by hand; or special suction or other devices are provided for threading existing shuttles. Efforts are still being directed toward abating dust and improving ventilation in the carding-room of spinning mills. Chemical and fermentation processes for the extraction of fibre from flax, ramie, and other plants both for spinning and papermaking are also worthy of remark. In the chemical industry considerable activity has been shown in connection with the synthetic production of indiarubber and of ammonia, the catalytic reduction of unsaturated fats, oils, and the like, and the reproduction of vat dyes of the anthracene series. As a result of recent railway collisions that occured towards the end of 1910 and early in 1911 (such as those at Hawes Junction and Pontypridd), caused in each case by a train being signaled into a section of the line already occupied by a standing train or engine, many applications were received dealing with the prevention of such accidents by automatic apparatus.

There were 1,518 applications made by way of communication from abroad, of which 755 came from the United States, 467 from Germany, 43 from France, 28 from Canada, and 27 from India. There was an increase in the number of applications received from Austria, Belgium, Denmark, France, Germany, Italy, Russia, Spain, Sweden, Switzerland, and the Argentine Republic, and a decrease in those from Norway, Roumania, Turkey, Brazil, and the United States. Under the provisions of section 26, which empowers the Comptroller to revoke a patent upon the application, within two years from the date of the patent, of any person who would have been entitled to oppose its grant, there were eight applications, one of which was rejected as being out of time. In one of the remaining cases the patent was revoked, in two the application was dismissed, two applications were withdrawn, and two are outstanding. The number of applications made for the revocation of patents worked exclusively or mainly outside the United Kingdom was five. In two of these cases the patent was revoked, in one the application was dismissed, in one the patent expired after the proceedings had begun, and the remaining case is still pending.

During the last ten years the number of hearings upon oppositions to the grant of patents was 1,316, and the number of appeals to the Law Officer in these oppositions 266, of which 57 were withdrawn or abandoned and nine are still outstanding, while in two cases the publication of the patent was abandoned. The number of appeals heard by the Law Officer in these cases was therefore 198. In 118 of these appeals the decision of the Comptroller was supported, in 55 varied and in 25 reversed.

In the classes for printed or woven designs on textile goods the number of applications made was 24,678 as compared with 11,759 in 1910, an increase of 12,919 or nearly 110 per cent. Of these applications about 23,905 or 97 per cent were made at the Manchester branch office. The number of designs refused registration on account of their similarity to designs already registered was 574. During the year 2,264 applications for registration of designs (including the above mentioned 574) were objected to by the Comptroller.

The objections, other than those on account of similarity to designs already registered, were chiefly on account of want of subject-matter or want of substantial novelty. The applicants in 930 cases acquiesced in the objections raised by the Comptroller without applying for a hearing, and 222 applications were allowed after correspondence to proceed. In the remaining 1,112 cases the applicants were accorded hearings, with the result that 299 applications were accepted without alteration; 514 were refused, 267 were accepted subject to modification, and 32 applications are still under consideration. There were 14 appeals from the Comptroller's refusal; in seven cases the appeals were dismissed and in seven were allowed. The number of designs of which the copyright was extended at the end of five years for a further period of five years was 1,041, as compared with 1,028 in 1910.

The number of applications made in 1911 for the registration of trade-marks (including 94 applications made to the Cutler's Company of Sheffield) was 9,743 as compared with 10,623 in 1910. There were 3,471 hearings under section 53 of the Act. The notices of opposition to the registration of trade marks under section 14 of the Act numbered 156, and 42 cases were heard.

A CLASSIFIED list of Patents issued during the month appears in each issue of the INVENTIVE AGE. This keeps inventors and manufacturers posted in the art in which they are most interested.—We will send, postpaid, to any address, printed copies of any U. S. patent, with specifications and drawings, upon receipt of 10 cents per copy.—Please give correct data in ordering.—Address,

THE INVENTIVE AGE PUBLISHING CO., 918 F St., N. W., Washington, D. C.

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Fence stretcher, Wire...W. J. Montgomery
Fence stretching clamp, Wire..J. W. Taylor
Fence, Wire.....J. H. Downs
Fertilizer distributer.....S. R. Sikes
Fertilizer distributer and cotton seed planter, Combined.....L. P. Oswalt
Figure, Dancing.....W. J. Nickerson
Filament apparatus.....S. Ferguson
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Filaments for incandescent electric lamps, Manufacture of metallic.....H. Bresler
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Filing case.....G. A. Chambers
Filter.....K. Kiefer
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Finger exercising machine....H. G. Leland
Fire alarm.....C. G. Carlson
Fire extinguishing apparatus..G. J. Coutu
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Fire resisting shutter (Reissue)..... E. H. McCloud
Firearm.....J. D. Pedersen
Firearm and boxer, Combined....B. Kreith
Fish can.....C. E. Shafer
Fish, Propagation of.....F. Parry
Flash light apparatus.....I. G. McColl
Flax felt machine.....J. E. Lappen
Floor box.....J. Fountain, Jr. et al.
Floor surfacing machine...E. E. Hughes
Flow through a passage, Means for regulating rate of.....C. Lightfoot
Fluid compressor, Centrifugal elastic..... K. Alquist
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Flushing apparatus for water closets, Seat actuated.....L. D. Lawnin
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Footwear, Antislipping attachment for.... J. M. Alexander
Forceps, Pig.....E. E. Adams et al.
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Galvanic metal reproductions of articles of the plastic arts, Manufacture of..... C. Bonsinger
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Game apparatus, Naval war..... J. H. Hammond, Jr.
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Garment fastening hook for women and children.....M. B. Goodwin
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Gases, Means for analyzing flue..... H. H. Wilson
Gasolene supply to engines, &c., Air pressure creating device for.....W. P. Herbert
Gate.....J. W. Ingersoll, Jr.
Gearing.....J. M. Merritt
Gearing, Change speed.....P. Daimler
Gearing, Differential.....O. Zachow
Gearing, Transmission.....F. H. Royce
Glass holder.....W. A. Younie
Glues, &c., Manufacture of....J. M. Neil
Golf practising apparatus..F. L. Connable
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Grading machine, Road.....P. L. Stacker
Grinding machine.....S. D. Olsen
Grooves and the like upon the sides of rollers, &c., Machine for forming..... H. Hess
Grubbing and ditching machine, Sage-brush S. M. Raber
Hacksaw frame.....J. W. McQuillan
Hair cutter.....S. Perrone
Hammer drills, Rotation device for..... C. C. Hansen
Hanger for false work.....A. Arnn
Harness.....J. C. Harpham
Harrow.....M. Merkel
Harrow and seed planter, Combined..... J. A. Erickson
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Hasp fastener.....R. E. Matthews
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Picker check.....H. Cote
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Pile driving engine.....A. B. Clark
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Pump, Compressor.....W. F. Ruwell
Pumps, Injector attachment for air or steam.....F. S. Morgan
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Registering mechanism for doors.....J. R. Moody
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Relay, High potential.....H. W. Cheney
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Rock drills, Rotation device for.....C. C. Hansen
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Show case (2 pats.).....L. W. Welch
Show case.....T. E. Lindsay
Shuttle check.....P. F Marcante
Side dump body.....T Wright
Signal switch, Electric...C. and A. Beck
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Signaling system, Party line selective.....C. E. Scribner
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Issued April 23, 1912.

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Coop, Knockdown chicken...I. Davis
Core actuator...C. O. Brandell
Corset fastener...D. F. Crossman
Corset steel reinforcer...L. W. Liteh
Cotton chopper...C. W. Leubner
Cotton cleaner, Seed...H. Thompson
Cotton picker, Pneumatic...E. Murray
Crank mechanism...E. H. Miller
Crank pin turner, Portable...L. G. Schweinebraten
Culinary implement...W. T. Wood
Curtain fixture...P. R. Schmaltz
Curtain holder...A. Mattern
Curtain pole...F. Ramming
Cnrtain pole and roller fixture, Combined...L. Lewandowski
Cycle frame rear wheel fitting...C. G. McKellar
Damper...L. J. Mueller, Jr.
Dental plate...H. J. Smith
Dental plates, Method and means for producing...H. J. Smith
Detachable roller...A. W. Kaufman
Directory, Key operated...G. I. Leonard et al.
Display and storage ease, Counter...L. Frank
Display figure attachment...W. H. Bayette
Display rack...R. S. Ford
Door check cushion stop...H. G. Voight
Door lock, Wardrobe...H. G. Voight et al.
Door track and cap, Sliding...M. H. McNamara
Drill extractor...B. F. Betts
Drill holder (Reissue)...D. A. Sine
Drills, Drill hole cleaning attachment for hammers...D. S. Waugh
Drinking cup, Sanitary...F. H. Ellsworth
Drinking fountain...T. J. Price
Driving mechanism, Reversing...F. D. Thomson
Duplicating apparatus, Stencil...A. B. Dick
Dust sucker, Vacuum...G. Lindenberg
Dye...M. Weiler
Dye, Azo...H. Schweitzer et al.
Dye, Azo (2 pat.s)...H. Jordan et al.
Dyestuff and making same, Alizocrin-red vat...M. Hessenland
Eggs, Preserving...F. Belhommet
Elastic fabric...W. Kops
Elastic tire...T. B., A. G., and G. P. Marchant
Elastic webbing and weaving the same...W. Kops
Electric furnace...M. R. Conley
Electric generator...B. P. and F. I. Remy et al.
Electric heating unit...T. Van Aller
Electric light attachment...A. J. Pagnod
Electric light socket handle...F. Clapham
Electric transformer and motor generator, Rotary...J. C. Macfarlane et al.
Electrical pull socket...D. P. Wolhaupter
Electrode...J. Harden
Electrolier...T. P. Strittmatter
Electromechanical device (2 pats.)...G. H. Rowe
Elevating attachment...J. W. Ashworth
Elevator safety appliance...G. W. Lathrop et al.
Elevator safety device...F. A. Krenz
Elevator safety device...J. Tozser
Enamels, Producing a filler for white...I. Kriedl
Engine...A. Tosco et al.
Engine...J. G. Crowdes
Engine cranking device, Internal combustion...M. G. Worth
Engine gearing, Housing for traction...E. M. Wheelock
Engine reverse gear, Steam...F. J. Cole
Engine starter...W. D. Everly
Engine starting device, Explosion...C. C. Roth
Engine starting device, Internal combnstion...C. F. Jenkins
Engine starting device, Internal combustion...E. A. Halbleib
Engines, Self starting device for internal combustion...L. T. Weiss, Jr.
Envelop...J. S. Heeley
Evener bar...E. Duschen
Exhaust controlling mechanism...S. S. Stevenson
Eyeglass holder...F. R. Bishop
Eyeglass reel...H. B. Bingham
Fabric constructed of laminated cohesive interwound members...L. A. Subers
Fans for generating progressing and ascending movements of a body in a fluid medium, Apparatus comprising...M. Reymond
Fare register...A. J. Laland
Faucet...J. H. Boye
Faucet, Self closing...J. Mueller
Feather articles, Making imitation...D. Metzger
Feed cutter and grinder, Alfalfa...W. Miks
Feeding appliance, Poultry...J. I. Lee
Fence post...W. L. Rubeck
Fiber collecting and assorting apparatus...M. E. Ryan
Fibers of kapok and other plants, Treating brittle vegetable...E. G. Stark
Filament forming machine...L. E. Dempster
Fillers, Machine for making...L. P. Brown
Filtering apparatus...D. J. Kelly
Firearm...J. W. Dowden
Fish plate bolt...L. E. Beaulieu
Fishing reel...S. Kadla
Flat iron, Self heating...F. Maiworm et al.
Flexible joint...E. J. Corbett
Floral decoration holder, Adjnstable...D. A. Lytle
Flushing apparatus, Water closet...F. M. Mackin
Flying machine...J. C. Doty
Flying machine...J. A. Jung
Flying maehine...R. L. Matteson
Flying machine...A. Rogestvensky
Flying machine starting device...K. Voller
Folding machine...R. C. Seymour
Food composition...F. M. Borchert
Food materials into shreds or fibers, Machine for converting...W. E. Williams
Fruit gathering device...B. Russell
Fruit picker...K. D. Pierce et al.
Fuel feed system...F. M. Murphy
Fullers' earth and analogous materials, Separating and purifying...C. C. Ruprecht
Furnace...O. D. and H. M. Cotton
Furnace bridge wall...R. Wager
Fuse box, Rotary magazine...L. D. Epperson
Game...W. C. O'Donnell
Game apparatus...E. M. Frank
Garment, Combination...P. R. Straus
Gas alarm, Electric...C. C. Clark
Gas burner...A. B. Murray
Gas burner...G. H. Hnston
Gas burner...E. R. Brayshaw
Gas burner...F. W. Gault, Jr.
Gas burner, Incondescent...H. Sussmann
Gas burners, Windproof casing for inverted incandescent...K. A. A. Staahlgren
Gas generating apparatus...M. and J. H. White
Gas generating or producing apparatus...A. S. Cambridge
Gas lighter, Automatic...J. A. Nelson
Gas liquefying apparatus, Accumulator and separator attachment for...F. C. Bell
Gas producing oven...A. Gohmann
Gate...A. Polzer
Gate...H. Harding
Gearing...P. Lord
Gearing (2 pats.)...H. M. Norris
Gearing, Transmission...H. C. McBrair
Glass gathering machine...A. L. Schram
Go cart...W. Boyens
Gold leaf, Making imitation...J. G. Potter
Gong striking mechanism...H. J. Heeney
Goniometer, Spherical...C. B. E. Laures
Grain drier...V. Lucas et al.
Grinding and buffing wheel...L. H. Brinkman
Ground clamp...H. W. Pleister
Grouting machine...D. A. Osgood
Gums, Treating palo-amarillo and similar...G. B. Bradshaw
Hair clipper...R. Romano
Hammer...C. S. Boden
Handle clamp, Adjustable...G. E. Whipple
Harvesting machine motor attachment...A. Johnson
Hat packing ring...P. Berg
Hat pin protector...C. A. Huffmaster
Hat pin protector or guard...C. H. Giese, Jr.
Hay rack...W. Wohmiller
Headlight, Automobile...J. B. McKiel
Heating and ventilating system...C. H. Smith
Heating device...J. W. McDonald
Heating element, Universal electric induction...J. L. Anderson
Heating system...W. H. Swett
Heel lining, Auxiliary...T. S. Rogers
Hog scraping machine...W. E. P. Meier
Holder reel...C. A. Coggeshall
Hoof parer...C. Bursell
Horse hitching weight...W. D. Lee
Horse overshoe, Antislipping...A. L. Hardisty
Horseshoe...R. L. Taylor
Hose coupling...V. Sanphy
Hub, Wheel...J. J. McGuire
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Hydraulic power plant...J. T. Dougine
Hydraulic press...M. Rothe
Hydroaeroplane...E. Florlanini
Ignition systems, Mechanical interrupter for electrical...G. Honold
Index for loose leaf records and the like...S. B. Kirtley
Indicating and protective device...D. R. Knapp
Indicating device...A. McNabb
Indicator...S. T. Applegate
Inductor alternator...E. Podlesak
Inlaying metal in masses such as celluloid, ebonite and the like...J. Kaufmann
Instruction, Means for imparting...N. Gothberg
Insulating tie bar...C. A. Christofferson
Internal combustion engine...J. C. Peache
Internal combustion generator...I. C. Jennings
Jewelry, Front for articles of...F. P. Barney
Joint machine and welt-cutter...C. S. Norden
Journal box securing meehanism...A. O. Buckius, Jr.
Journal box securing mechanism...H. F. Pope
Kerosene burner regulator...H. Lemp
Kinematographs and sound production apparatus, Apparatus for synchronously operating combined...C. M. Hepworth
Knockdown bin or tank...M. V. Hostetter
Labeling machine...F. O. Woodland
Lace fabric...H. Busehor
Ladder...P. E. Vierheller
Lamp, Gas...S. B. Harvey
Lamp hanger, Electric, (2 pats.)...E. E. Schellenger
Lamp holder...W. Klement
Lamp, Incandescent...A. F. Thompson
Lamp, Miner's...W. P. Rice
Lamp, Signal...H. C. Wagner
Lamp for illuminator for antos and other vehieles...W. K. Lenhart
Lamp socket...R. B. Benjamin
Lamp socket, Elcetrie...G. W. Goodridge
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Latch, Night...F. Soley
Latch, Night...H. G. Voight
Lathe attachment...R. E. Garrett
Lathing securing tack strip...A. H. Gilmore
Leather stitehing maehine...B. H. Theisen et al.
Lens blanks, Making bifocal...W. I. Seymour
Let off, Friction...O. Dalfond
Levers, Mechanism for automatically operating...T. A. McCall
Lighting switch, Progressive...G. T. Fielding, Jr.
Line holder...G. B. Harleston
Liquid fuel burner...J. Gomez
Liquid motor, Reversible...W. E. Pearson
Liquids, Apparatns for changing the temperature of...P. J. Cartault
Lock...H. G. Voight
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Locomotive smoke box...B. F. Stannard et al.
Loom filling exhaustion indicating mechanism...A. E. Rhoades
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Loom take-up mechanism...G. A. Coburn
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Magnetic separator...J. Weatherby, Jr., et al.
Mail boxes, &c., Package or paper holder for...V. C. Koons
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Manhole and well for subways...M. Clarkson
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Match box...J. N. Branyan
Matrix setting device...R. Thomas
Measuring device, Liquid...A. D. Mosby
Measuring tape...J. W. Melville
Mesh fabric...T. Allsop
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Meter...W. J. Mowbray
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Mold...E. Pfeifer
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Motor starter...G. H. Whittingham
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Mounting or setting...J. A. Abel
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Nut, Lock...A. J. Threm
Nut locking device...P. W. Stein
Oil extracting device...C. Turner et al.
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Packing expander, Piston...G. Christenson
Packing ring...W. Teschemacher
Pail, Dinner...J. B. Tuttle
Pail protector...T. H. Barnes
Paper baler...A. E. Beall et al.
Paper feeding mechanism...H. C. Osborn
Pedestal, Folding...P. F. Meyer
Pen, Fountain...M. O. Borbeck
Pen nibs, Grinding...J. Bissell
Perambulator...F. A. Nants
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Photographic mats and masks, Apparatus for forming...S. F. Badgley
Piano tone modifier...P. Wales
Pianos and similar musical instruments, Pneumatic action for player...G. Bjorkland
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Picker check...H. Cote et al.
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Pipe wrench...L. Whitcomb
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Planter, Lister...R. R. Langley
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Plaster board, Apparatus for making...H. S. Heichert
Plow, Sulky...A. M. Chase
Plumes for headwear and other purposes, Supporter for...F. A. Shafer
Pneumatic cleaner...J. C. Tauber
Pneumatic cushion for vehicles...A. J. Oling
Pole...O. F. Reynolds
Pole changer...E. M. Tormin
Pool ball rack attachment...E. P. Sommers
Postage stamping and recording apparatus...T. M. Belknap
Potato digger...P. McGrath
Power producing process...P. Danckwardt
Press provided with an oscillating pressing arm...J. Sandt
Pressure gage...S. Dinsmore
Printing frame...D. W. Faulk
Printing press...J. L. Firm
Projecting apparatus...H. F. Patton
Propeller...B. W. Scott
Propeller...C. H. Johnson
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Pull socket...F. L. Rowntree
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Pump packing, Metallie...E. M. Scoville
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Pump regulator, Antomatic...E. H. Bridenbaugh
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Rail tie, Metal...A. C. Dinkey
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Railway tie...D. S. Beaeh
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Railway tie and means for securing a rail to the same, Metallic...A. C. Bosel
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Railway traek fastening...C. J. Gadd
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Reamer, Adjustable...J. A. Etzold et al.
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Register...A. Zettervall
Reloading tool...O. Arnason
Ring forming machine...H. Heinrich
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Rolling mill and like machine, Two-high reversing...A. Lamberton
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Sad iron...A. H. Biekel
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Saw, Sector cutting...K. Peterson
Sawset...W. R. Garrett
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Scrap bundling machine...C. W. Bennett
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Sewing machine multiple tuck folder...J. Douglas
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Sewing maehine strip folding and guiding attachment...A. H. Devoe
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Shaft coupling, Spring drive or power...W. Perry et al.
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Shaving machine...M. E. Ryan
Shearing machine...W. H. Luther
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Shell construction...C. J. Sowards
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Show case...F. X. Ganter
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Sidewalk trap...T. M. Brintnall
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Skirt marker...A. A. Hall
Sled, Power propelled...A. Reichenstein
Slime eoncentrator...E. C. Porter
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Steam boiler.....H. V. Brady
Steering mechanism.....W. E. Christopher
Stool and table, Combined folding.....O. Florian
Store front construction.....V. Ross
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Street and station indicator..J. R. Tucker
Stropping device.....J. A. Harrington
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Sugar drying apparatus.....W. H. Hannam et al.
Switch operating mechanism, Combined track and trolley.....I. E. Nicholson
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Switches, Interlocking device for remote control.....C. Wiler
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Tag holder, License.....J. W. Yochem
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Tea, coffee and other beverages, Apparatus for brewing.....T. J. Howlett
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Telephone exchange system..E. E. Clement
Telephone exchange system, Automatic....G. Deakin
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Tennis nets, Stretching device for lawn....W. S. Edwards
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Ticketing machine, Automatic pin.....B. W. Scott
Tile, Facing.....J. B. Owens
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Tire, Elastic.....A. W. Torkington
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Valve, Trap.....R. H. Thomas
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Vehicle driving and steering mechanism, Power operated.....J. W. Bould
Vehicle spring.....W. S. Lee
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Vehicle, Traction.....H. M. Fletcher
Vehicle wheel.....R. T. Smith
Vehicles, Combined tank bracket and step for motor.....R. Huff
Vending machine, Coin controlled cigar...G. L. Van Buren
Vending machines, Delivery protector for.....H. S. Mills
Vials and the like, Machine for making...W. R. Burrows
Vibration stop governor.....J. E. Snyder
Voting machine.....J. H. Dean
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Wall or dam construction..C. F. Francisco
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Issued April 30, 1912.

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Boots and shoes, Machine for use in the manufacture of.....A. L. Russell
Boring bar.....I. W. Sprink
Bottle capping machine.....A. M. Baroody
Bottle closure.....G. W. Trexler
Bottle crown shield.....H. E. Knaust
Bottle protector, Milk.....J. R. Carter
Bottle receptacle, Milk or cream.....E. W. Bauer
Box fastening.....J. O. Olsen
Box lid attaching means...L. I. Heilbrun
Brace for fractured bones.....L. L. Miner
Bracket.....M. L. Longworth
Brad feeding and driving apparatus.....R. J. Morrison
Brake beam safety support....D. M. Knox
Bucket, Grab.....J. L. Butler
Buckle, Cross-line.....A. L. Cook
Buffer beam.....C. T. Westlake
Buffing machine.....G. B. Grover
Building structures, Load supporting column for.....A. F. Anderson
Bundle loading device.....S. Hug
Burglar alarm attachment..G. A. Brewster
Burner.....E. J. Spink
Cable suspension.....M. Morey
Cableway logging apparatus.....J. H. Dickinson
Caisson construction.....E. Bignell
Caisson, Self-sinking.....E. Bignell
Camera back.....A. A. Ruttan et al.
Can.....G. Russell
Can nozzle, Oil and other.....S. Caruso
Can opener.....E. Wolfer
Candy kisses, &c., Machine for cutting and wrapping.....E. R. Knott
Car coupling.....A. A. Lorimor
Car door.....F. X. Malocsay
Car door, Flush.....L. G. Handy
Car door mechanism.....P. M. Elliott
Car grain door, Freight.....H. Kaler
Car heater, Convertible steam...E. E. Gold
Car indicator, Railway.....A. May
Car roof.....W. D. Thompson
Car seat, Motor.....L. Wilkening
Car stake and pocket.....C. H. Vandonk
Carafe and stopper.....A. Heinemann
Carpenter's laying out tool.....G. Myers
Cart, Dumping.....L. Wolf
Cartridge cases of brass or other alloys of copper, Manufacture of.....H. Ehrhardt
Cash register.....W. H. Muzzy
Casting apparatus delivery pipe.....F. de Bnigne
Casting ingots, Process and apparatus for.....J. Ensslen
Casting reel.....J. Murgas
Catching device, Antomatic.....I. W. Trew et al.
Ceiling, Ferroconcrete ribbed.....J. H. A. Wrissenberg
Centrifugal separation..J. E. Hatton et al.
Chair.....G. R. Schweikert et al.
Chair and couch, Combination.....P. F. McCaffrey
Chandelier.....A. Sechrist
Check controlled mechanism.....C. C. Travis et al.
Check, Manifolding salesman's..E. Z. Lewis
Chisel, Granite.....I. H. Jenkins
Chuck, Piston ring.....D. F. Domizi
Cigar and cigarette holder.....J. V. Fernandez
Cigar lighter.....A. R. Mann, Jr.
Cigar lighter, Antomatic....G. W. Everett
Cigar molding machine.....W. E. Jenkins
Cigar tip cutter.....E. Brunhoff
Clock, Electric automobile.....W. H. Thompson
Closet seat.....W. S. Hamm et al.
Closing mechanism and the like.....W. V. Gilbert
Clothes line reel.....F. Eiche
Clutch.....F. R. Allen
Clutch, Combined friction and jaw.....H. F. Noyes
Clutch mechanism, Friction...T. S. Miller
Clutch, Roller.....H. M. Hunter
Coin controlled apparatus.....H. Schorske
Collar supporter.....F. B. Reynolds
Column, Skeleton.....M. E. Sanford
Compass, Mariner's liquid...L. A. Sherman
Composing machines, Line measuring and automatic justifying mechanism for.....R. C. Elliott
Composition of matter.....J. J. Davoren
Compressed air engine.....D. R. Murphy
Compressed air engine.....C. B. Hodges
Concertina-action.....E. Glass
Concrete building.....C. A. P. Turner
Concrete curbs for graves, Mold for.....J. Muckey
Concrete structure, Reinforced.....P. Holmberg
Concerting piles.....A. H. Davis
Controller regulator.....C. P. Ebersole
Conveyances propelled by electricity, Safety device for passenger carrying.....W. B. Hopkins
Cooking articles of food.....C. Lampert
Cotton chopper attachment..C. W. Mathus
Coupling and steering mechanism, Combined.....T. V. Buckwalter
Coupling device or clasp.....C. A. Gifford
Cover, Utensil.....H. E. Holmes
Crane operating mechanism....J. P. Dowd
Crank case.....R. Huff
Crank shaft.....H. L. Arnold
Crossing gate.....I. C. Johnson
Crushing machine.....C. G. Buchanan
Cultivator.....C. W. Gift
Current motor.....J. H. Martin
Current regulator, Alternating.....T. E. Adams
Curtain fixture.....S. Skwarczewski
Curtain hanger.....W. H. Huffman
Curtain pole removing device.....A. W. Beglinger
Curtain stretcher.....K. S. McKelvey
Cuspidor.....A. Szabados
Cut-off device, Fluid.....H. Nold
Damper.....W. J. Moreland
Davit and the raising and lowering gear therefor, Boat's.....J. Graham
Decorated fabric.....J. A. Grocbli
Derrick.....V. O. Barlow et al.
Diaminodioxyarsenobenzene, Derivatives of.....G. Korndorfer
Disinfecting device.....G. Michels
Display stand.....C. L. Hickey
Door catch.....M. Hughes
Door locking means.....F. Schmidgall
Door, Metallic.....C. M. Sinclair
Door operating mechanism.....S. Jones
Draft, Reversible.....M. B. Metcalf
Draping dummies from an uncut length of cloth, Method and apparatus for.....R. F. Downey
Drawings, writings, photographs, blocks, and the like, Machine for the electromechanical reproduction of..H. Carbonnelle
Dredging machines, Suction tube for hydraulic.....L. J. Baltz
Dress weight tape.....A. Wein
Dyestuffs, Manufacture of azo.....H. Levinstein et al.
Electric bulb sockets, Shade holder for....C. W. Lucas
Electrical circuit controlling apparatus (2 pats.).....T. L. Lee, Jr.
Electric circuit regulating means.....H. Leitner et al.
Electric contact device (2 pats.).....C. W. Coleman
Electric furnace.....E. Stassano
Electric illuminating dev[illegible].....R. H. Henderson
Electric lighting system.....E. and N. R. Booth
Electric lights, telephones, &c., Holder for.....C. W. Sprague
Electric machine, Homopolar, acyclic, or unipolar dynamo.....O. Schulz
Electric machines, Magnetizable wedge for dynamo.....R. L. Hellmund
Electric trap.....C. A. Bowen
Electrolytic cell....O. H. and A. F. Pieper
Electromagnet.....A. Quasten berg
Electromagnetically operated switch.....G. H. Hill
Elevator safety device.....V. W. Mason
Embroideries, Machine for cutting.....A. Tscherne
Embroidering machine (3 pats.).....M. Schoenfeld
Embroidering machines, Counterbalancing mechanism for.....J. A. Groebli
End gate, Wagon.....C. Skidmore
Engine reversing mechanism, Explosive.....I. B. Moore
Engine starter.....W. H. Williams
Engines, Device for attaching reels to.....F. J. Moser
Evaporating apparatus.....N. H. Miller
Expansion bolt.....H. W. Munger
Exploding charges, Means for (2 pats.).....C. I. Dodson
Explosion engine (2 pats.)..H. E. Coffin
Eyeglasses, Bridge spring for....L. F. Adt
Fabrics, Production of peculiar color effects on textile.....M. Becke
Farm gate.....J. S. Hendricks
Fastening device.....J. Hampson
Fats, oils and fish oils into like bodies of higher melting point, Converting.....M. Wilbnschewitsch
Faucet.....C. Wright
Feed water heater.....J. M. Mackie
Fence post.....J. M. Kissinger et al.
Fence post brace.....J. Heyerly
Fertilizer and producing the same.....L. R. Coates
Fertilizer feed, Adjustable cone for.....C. E. Lutz
Filament support.....J. W. Howell
Filaments of electric lamps, Drying cement clamps for.....H. W. Bresler
Fire bucket.....A. E. Waggoner
Firearm.....G. W. Grnver
Fireplace.....W. W. Guy
Fixture hanger.....J. G. Knight
Flue expander.....J. F. Meeker
Fluid pressure regulator.....H. H. Kelley
Flying machine.....A. H. Blount
Flying machine.....O. R. Cassell
Flying machine.....H. Jordan
Flying machine safety device.....C. H. Burford
Fruit cleaning machine....E. D. Howard
Fruit pitting machine (2 pats.).....J. B. Foote
Fuel burning apparatus.....C. J. Coleman
Furnace and stove structure.....W. F. Brunswick
Furnace charging device....J. W. Dougherty
Furnaces, Increasing the temperature of combustion in gas-fired....H. L. Doherty
Furnaces, Means for removing slag from hearth.....K. Stobrawa
Furniture, Knockdown...F. L. Vordemfelde
Furniture, Upholstered.....E. Peterson
Fuse and cap, Blasting.....W. E. Ingram
Fusible link.....J. R. Hamilton
Game board, Arithmetical..W. H. Snyder
Gas burner.....H. E. Harris
Gas burner.....E. C. Dickinson
Gas dry cleaner.....M. W. Johnson, Jr.
Gas generators, Indicator for acetylene.....J. E. Hill
Gas lighting and extinguishing apparatus, Electric.....J. S. Benton
Gate.....J. S. Hendricks
Gearing.....W. F. Eckert et al.
Gearing.....A. I. Hoyland
Gearing, Variable speed.....J. S. Barnes
Glass cylinders, Device for severing.....R. L. Frink
Glass sign boards, Manufacture of.....E. Bosinger
Governor attachment.....J. R. Hodgen
Grain treating apparatus.....E. B. Cox
Grease and oil extracting apparatus.....C. Edgerton
Grease cup.....G. W. Bowen
Grip device, Intermittent.....C. Hess
Handle bars, Adjustable.....W. J. Steffel
Hardy operating device.....H. C. Gist
Harness stop motion device....F. Ehinger
Harvester, Tea.....H. T. Coldwell
Harvesting machine, Cotton...J. F. Appleby
Hat.....L. Stevens
Hat pin protector.....E. B. Eckhart
Heating element, Electric.....J. C. C. Macdonogh
Heating or cooling apparatus.....L. A. Carter et al.
Heating system.....J. M. W. Kitchen
Heating system, Steam.....C. A. Ball
Heating systems, Operating steam.....C. A. Ball
Heel breasting machine (Reissue).....B. B. Waterman
Heel, Pieced.....A. C. Redden
Heels of boots and shoes, Tool for finishing the.....Z. Beaudry
Hinge.....J. A. Dupuis
Hoisting apparatus.....L. O. Forman
Hoisting engine.....T. S. Miller
Horses' manes, Holder for..B. C. McDonald
Hose coupling.....E. H. Gold
Hose making machine.....S. J. Sill
Hosiery frames, Welting mechanism for flat.....M. S. Esche
Hot air furnace, Gas burning.....J. L. Whitney
Hot water heater.....A. J. Gohmann
Hot water or steam heater.....W. A. Wiedebusch
Hydraulic lubricator (2 pats.)..F. Mueller
Hydraulic traverse mechanism..E. S. Cole

Hydrocarbon burner.....A. G. Sherman
Hub and bearing sleeve, Wheel.....L. Holland-Letz
Hydrocarbon furnace..J. A. Darst et al.
Ice cream freezer supporting attachment..I. G. Hopkins
Ice cutting-up machine..E. E. Nolan et al.
Igniter.....H. L. Allen
igniter, Sparking.....L. H. Wattles
Igniting device.....W. S. Andrews et al.
Ignition apparatus, Portable faultfinding device for electrical.....S. P. Hedges
Ignition tube.....A. Butsch
Induction motor, Reversible..F. R. Kunkel
Insect destroyer.....W. C. Pinson
Internal combustion engine.....H. Whidbourne et al.
Internal combustion engine.....E. Moewes et al.
Interwound fabric, Laminated cohesive....L. A. Subers
Iron ores, Treating.....B. F. Halvorsen
Ironing board.....J. B. Cottle
Joint chair.....G. Barclay
Knife cleaner.....C. A. Wild
Knot tier.....V. S. Westcott
Lac, Treating.....J. Johannes
Lace guide, Boot and shoe.....A. F. von Gillern
Ladder, Car.....W. S. Schroeder
Lamp connector.....J. B. McKiel
Lamp fixture, Electric.....A. G. McArdle
Last.....G. W. Sampson
Latch, Gate.....A. W. Sprague et al.
Level.....W. L. Couture
Level.....C. F. Harris
Lifting jack.....J. Y. Kline
Lighting apparatus....R. M. Dixon et al.
Lightning arresters, Manufacture of vacuum.....F. S. Chapman
Liquid fuel burning apparatus.....W. E. Oakley
Liquid separating apparatus.....K. C. Randall et al.
Liquid separator, Centrifugal.....H. Feldmeier et al
Lock.....G. N. Mason
Locomotive driving box.....F. A. Walsh
Locomotive engine.....F. J. Cole
Loom tension mechanism....E. E. Sibley
Lubricant cup.....G. W. Bowen
Magnetic separator.....J. Weatherby Jr.
Magnifying glass.....J. Hampson
Mail and parcel collecting and distributing system (2 pats).....R. G. Starkweather
Mail bag catcher and deliverer..J. L. Adam
Mail box.....H. Chambers
Mail receiver.....R. C. Lambert
Mailing device.....W. L. Williams, et al.
Marker, Row.....T. B. Woods et al.
Match machine splint positioning device...H. A. Gsell
Measuring apparatus, Tip..D. E. Galloway
Measuring machine, Cloth..O. S. Blakeslee
Meat chopper and tenderer..W. M. Stanton
Metallic tie and rail fastener.....F. P. Hunkle et al.
Meter.....A. Frank
Meter connection box.....F. C. Grady
Mica board, &c., Machine for making.....W. H. Sills
Milking device.....E. Levay
Milking machine.....D. Klein
Mirror, Duplex hand.....T. Holmdahl
Moistening device, Envelop.....J. W. Lovepoy
Mold forming machine.....T. Lund
Monoplane.....J. A. Goodwin
Mop and holder and wringer, Combined...G. O. Reshaw
Mop wringer.....J. P. Morin
Motor control system, Electric..F. Conrad
Motor control system, Electric.....H. D. James
Motor controller, Electric (2 pats.).....J. R. Garner et al.
Motor lubricating system.....R. Huff
Motors, Automatic starting device for single phase induction.....P. J. Ray
Mud guard fastener.....A. S. Hall
Mud guard support.....E. Miller
Muffler.....E. D. Lewis
Muffler, Exhaust.....A. G. Snyder
Music leaf turner..H. H. Timmons et al.
Musical instruments, Automatic playing attachment for.....R. J. Bennett
Nett holder, Landing.....F. J. Sargent
Noodle cutter.....C. E. Swartzbaugh
Nut lock.....E. L. Minnig
Nut lock.....H. M. Burrell
Oil burner.....W. G. Nutt
Oil testing machine.....P. Wendt
Opera glass, Folding.....A. Levy
Operating table.....J. M. Baber
Orchard heater and vaporizer.....C. W. Johnson
Order guide.....E. J. Bliss
Ore conveyer and classifier..D. J. Nevill
Ore separators, Magnetic....J. Weatherby
Ozonizer.....H. R. Stuart et al.
Package lifter.....F. L. Hunt
Packing, Moisture proof (Reissue).....R. V. Collins
Padlock, Seal.....C. B. Lawler
Paint and varnish remover..T. M. Devine
Panic lock.....H. G. Voight
Paper bottles, &c., Machine for manufacturing.....H. R. Heyl
Paper testing machine.....J. O. Stanley
Paper testing machines, Operating mechanism for.....F. P. Cleveland
Pattern stripping machine.....W. F. Grill
Percussive apparatus, Pneumatic.....H. C. Rehr
Phonograph reproducer.....A. N. Pierman
Phonographic recording stylus.....T. A. Edison
Photographic holder.....F. E. Kip
Photography.....J. L. Kellogg
Piano casing.....F. Renek
Piano, Solo playing automatic....M. Clark
Pianos, &c., Note sheet for player.....C. F. Stoddard
Pick point, Detachable.....A. Walker
Picture machine, Moving.....F. A. Cole
Picture exhibiting apparatus.....C. L. Thomsen
Picture machine reel mechanism.....J. G. Lake
Picture machines, Projecting apparatus for moving.....G. E. Ripley et al.
Pictures, Arrangement for the projection of lantern.....R. Massohn et al.
Pictures, Projecting machine for moving..F. W. Wright
Pig extractor.....L. Larson
Piling construction.....E. Bignell
Piling, Sheet.....E. Bignell
Pin point guard.....J. Anderson
Pipe making machine.....A. C. Tunison
Pipe wrench.....H. L. Marty
Pipes, &c., Self packing connecton for....W. B. Dale
Pitcher, Syrup.....J. S. Jones
Plant protector.....W. H. Ragan
Planter and fertilizer distributer, Cotton..J. W. Sharp
Planter, Corn.....S. K. Dennis
Planting machine..R. J. and H. E. Altgelt
Plow.....R. E. Sucholtz
Plow.....C. A. Intrup
Plugs, Locking and controlling means for turning.....F. E. Youngs
Pneumatic drill or like machine (Reissue).....G. H. Hayes
Pocket case.....F. W. Briggs
Pocket knife and the like..C. A. Sjoberg
Postmarking machine, Electro.....F. G. Boswell
Pottery machine.....F. Kayser
Power transmission mechanism.....D. Nettenstrom
Power transmission mechanism.....H. Fottinger
Press.....J. E. Davis
Primary battery.....C. E. Hite
Printer's furniture.....S. Stephens
Printing machine.....W. Scott
Propeller.....J. L. Rikhoff
Protective device.....A. G. Jones
Pulley.....L. A. Biggar
Pulley and shade holder, Sash-cord.....A. D. Berg
Pulley, Clothes line.....G. A. Le Baron
Pulley covering.....W. C. Beam
Pump.....F. L. Waterous
Pump, Fluid.....G. H. Irwin et al.
Pump jack for double acting pumps.....F. W. Axtell
Pumping apparatus.....J. J. Groetken
Pumping purposes, Mechanism for transmitting power for.....J. A. Brown
Punching and shearing machine attachment.....A. Parfitt
Puncture alarm.....F. D. Schneider
Radiator (Reissue).....L. Loziano
Rail bending machine.....J. H. Cassidy
Rail chair.....H. Elliot
Rail clamp or stay.....W. H. Bates
Rail clamping device.....J. Patterson
Rail fastening.....J. W. Cuthbert
Rail, Guard.....P. D. Serrurier
Rail joint.....J. White
Rail joint.....J. G. McMichael
Rail joint.....K. Jasiecki et al.
Rail securing means.....G. W. Whiteman
Rail supporting plate....K. Jasiecki et al.
Rails, Apparatus for working on the upper or wearing portions of compound tram..J. Noll
Railway signal system, Automatic.....S. C. Perry
Railway spike.....W. A. Mooney
Railway tie.....E. Wyckoff
Rat trap, Electric.....J. Balint
Razor, Multibladed.....H. C. Harrison
Razor, Safety.....M. Hauser
Receptacle for mustard and other condiments.....A. J. Greaves
Reciprocating engine.....A. J. Jackson
Reeling mechanism.....A. C. Roebuck
Reflecting means for enabling one to see the back of the head or neck, Combination of.....G. E. Graham
Reflector support.....M. J. Kane
Reinforcement.....A. Atkinson
Releasing device.....C. Muller
Reversing mechanism, Automatic.....G. W. Cameron
Roach trap.....J. Dempster
Rock drills, Device for the facilitation of the exchange of bores in.....E. C. A. Herstad
Rolling mill.....W. Vassen
Roof.....H. Schwarz
Roofing, Ornamenting prepared.....M. B. Becker
Roofing, Prepared.....M. B. Becker
Rope clamp.....G. W. Cameron
Rotary engine.....J. C. King
Rubber waste, Apparatus for us in reclaiming vulcanized.....C. S. Heller
Rubber waste, Reclaiming vulcanized.....C. S. Heller
Safety pin.....L. Brody
Sales slip.....A. G. Mowat
Sash holder and lock.....W. M. Hotchkiss
Sash lock.....C. N. Estes
Saw clamp.....B. F. Padrick
Sawmill set works.....L. J. Hanhart
Scale attachment for vehicles.....J. H. Leyllain
Scissors.....W. H. and V. E. Spence
Scythe blades on handles, Means for securing.....J. Real
Seal.....D. D. Davis
Sealing and protecting perishable products.....W. A. Levering
Seat support (2 pats.).....W. S. Harley
Seed, Grading cotton.....J. O. B. Street
Semaphores, Means for operating.....M. K. Howe
Sewing machine.....G. E. Molyneux
Sewing machine bobbing holding device, Lock stitch.....J. E. Thayer
Sewing machine work holding and feeding means.....C. A. Dearborn
Shade and curtain fixture.....K. Berven
Sharpener, Blade.....J. E. Morse
Sharpening machine, Razor.....P. Amadeo
Shedding mechanism.....G. Fortier
Shelf structure.....W. Tietz
Shelving.....H. P. Beecher
Shirt envelop.....G. Wordingham
Shoe.....M. Rasmussen
Shoe polishing machine.....J. N. Wood
Shoe polishing machine..W. H. McConnell
Shoe stretcher.....W. L. Smith
Shoes, slippers and the like, Bow for ladies'.....A. Manheimer
Sifter, Flour.....J. H. Zyburn
Sifting machine, Flour.....E. C. May
Sign, Illuminated.....H. Mulholland
Sign support.....G. Wirsing
Signaling means, Selective.....J. McFell
Skate, Roller.....J. G. Doak
Skiving machine.....F. L. Harmon
Small arm (2 pats)...G. Vander Haeghen
Socket joint.....R. H. Brown
Socket shell.....T. A. C. Both
Soda fountain.....F. E. Lippincott
Sound boxes, Support and sound duct for..T. H. Macdonald
Sound record duplicating apparatus.....J. W. Aylsworth
Sound reproducer.....A. N. Pierman
Spark plug.....L. J. Dirand
Spark plug holder and spark indicator...E. H. Benn
Spectacle case.....E. Suhr
Speedometer.....R. B. A. Lemaignen
Spike.....T. C. Hanson
Spike, Expansion.....A. Martin
Spike machine.....G. Barr
Spinning spindle attachment.....T. Lewis
Spool and implement holder.....D. C. Williams
Spring wheel.....E. East
Spring wheel.....C. P. Carrick
Spring wheel.....C. Coughlin
Stamp, Hand.....M. C. Price
Stapling machine.....E. T. Greenfield
Staves, Manufacture of cask....C. E. Bratt
Steam generator..V. H. and J. H. T. Mills
Steam generator.....L. W. G. Flynt
Steel, Manufacture of..T. D. Mackie et al.
Steel plates, Manufacturing.....F. Giolitti
Stereoscope, Folding.....F. Berger
Stitching machine, Buttonhole..E. B. Allen
Stop bar.....J. S. Bancroft et al.
Stove, Gas.....M. Lachner
Straining appliance.....F. T. Page
Stropping machine.....R. M. Watson
Structural elements, Making..W. H. Janpole
Stumps, Destroying.....W. E. White
Suit and hat box, Collapsible.....H. B. Walter
Support, Adjustable.....F. Mergner
Swingletree.....L. E. Barnes
Swingletree, Spring.....G. W. Yates
Switch box.....J. Kronberger
Switch operating device...D. H. McDaniels
Table.....J. Gras
Tap, Barrel.....E. W. Brague
Target.....I. L. Reeves
Tea kettle cover.....O. F. Turner et al
Teat cup.....A. Gillies
Telegraphy, Oeculating device for flash lights for optical.....E. L. P. Pailliard-Tarenne
Telephone system.....H. P. Clausen
Temperature bath, Constant....T. B. Freas
Tension device.....G. Singleton
Tension device.....J. O. McKean
Terminal attachment engaging device.....J. E. Schaefer, Jr.
Thermometer casing, Clinical.....C. W. Boman
Tie and rail fastener, Combined..E. Stack
Tile unloadig machine.....R. M. Candee
Tire filling compound and process involving the same.....H. I. Manley
Tire for vehicle wheels, Resilient.....A. A. Curry
Tire for vehicle wheels, Spring cushioned..W. W. Lower
Tire, Resilient.....J. Thissen
Tool driver, Spiral.....M. Wolin
Tool holder.....J. D. Patnaude
Toothpicks, &c., Machine for stacking.....A. H. Hall
Toothpicks, Mechanism for stacking and conveying.....A. H. Hall
Torpedo cane.....H. F. Neu
Toy, Musical.....W. Bartholomae
Trap.....W. Lundstrom
Trap.....D. L. Davidson
Traveling bag for bowlers....L. B. Taylor
Trolley wheel.....W. M. Boyer
Trowel.....B. C. Currence
Truck.....W. A. Brandenburg
Truck.....B C.Rockwell
Trucks, Pivoted rear traction..P. E. Holt
Tumueling apparatus, Rock...H. F. Sutton
Turbine, Elastic fluid.....G. D. Atwood
Type casting and composing machine....J. S. Bancroft et al.
Type casting machine.....B. Leffingwell
Type casting machine.....F. H. Pierpont
Type mold.....A. L. Knight et al.
Typewriting machine.....O. Pfeiffer
Typewriting machine.....H. L. Woodward
Typewriting machine.....W. J. Barron
Typewriting machine F. W. Hillard
Valve. (2 pats.).....J. A. Barbour
Valve.....J. L. Fitts et al.
Valve, Flushing..W. A. Hunter Jr., et al.
Valve for steam heating systems.....E. E. Gold
Valve for water, Thermostatic.....J. J. Lawler
Valve, Furnace gas....M. W. Johnson, Jr.
Valve, Globe.....W. Stewart
Valve, Hydraulic.....C. L. Powelsen
Valve, Puppet.....R. Marlatt
Valve, Rotary.....C. L. Powelsen
Valve seating and surface lapping machine.....O. A. Olson
Vapor burner.....M. S. Herzog
Vault, Burial.....F. C. Searle
Vehicle brake.....M. C. Muir
Vehicle, Motor road.....F. H. Royce
Vehicle runner attachment.....J. F. Leith
Vehicle steering gear.....J. M. Gilstrap
Vehicle, Traction.....H. A. Howard
Vending machine.....T. B. Terteling
Vending machine.....F. J. Schumann
Ventilator.....W. Lintern
Vessels, Lifting frame for storage.....J. P. Voelker
Vise.....C. J. Jackson
Watch or clock dial.....F. S. Cornwell
Watchmaker's tool.....J. E. Smith
Water and sewage lift.....A. C. Wells
Water bag retainer.....E. R. Norwood
Water meter.....L. H. Nash
Wave force utilizing device...E. B. Arnold
Weed puller.....J. Dahl
Weighing machine, Liquid....C. J. Wilder
Wheel brake.....C. Aalborg
Wheel casting machine.....J. B. Walker
Wheel rim, Demountable....H. H. Replogle
Whistle.....E. P. Gray
Wire clamp for wire stretching machines.....D. C. Brogden
Wood, Impregnation of....J. Polifka et al.
Wood stain, Making.....W. H. Smith
Wrench.....F. Kovacs.
Wrench.....M. Pietilainen
Writing machine, Syllable.....P. de Carsalade du Pont

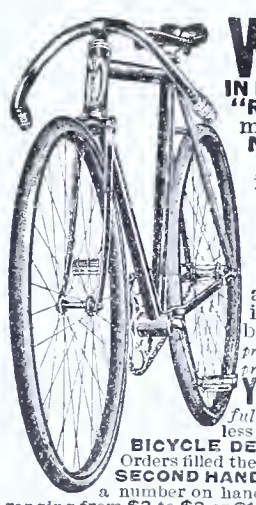
Issued May 7, 1912.

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Acetylene generator.....J. L. Richardson
Acid, Arylalkylbarbituric.....H. Hoerlein
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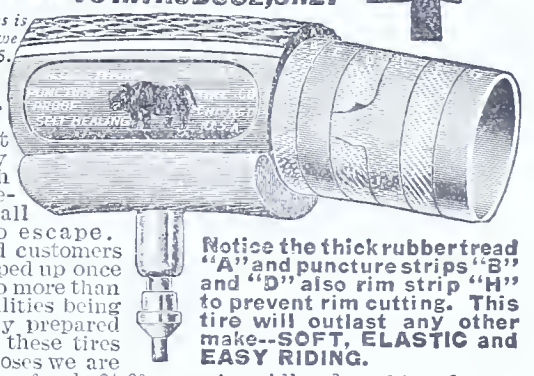
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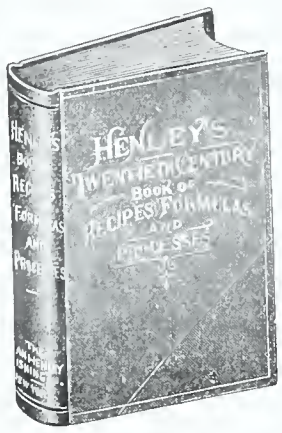
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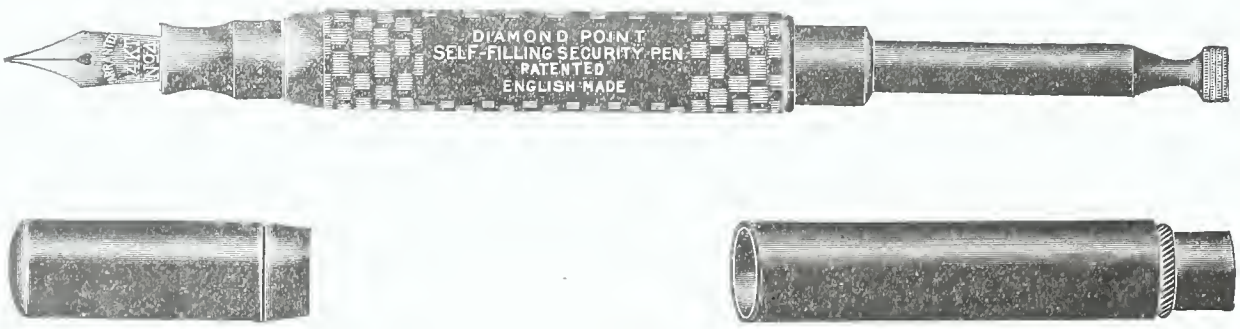
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The INVENTIVE AGE

A Journal of Manufacturing Industry and Scientific Progress.

VOL. XXIV. NO. 7. } WASHINGTON, D. C.---JULY 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

NEW HUMAN EYE EXAMINING INSTRUMENT.

By C. VAN LANGENDONCK.

DR. CARL HERTZELL, of Berlin, has recently devised an instrument for examining the fundus or back of the eye, which, it is claimed by the inventor, supersedes anything that has previously been in use.

The instrument, which is called the "ophtalmo-diaphanoscope," was especially invented as an aid to diagnosing diseases of the eye, but it has also proved of great service in examinations of the throat and nasal cavities, and it will probably prove useful to medical science in many other ways. Its main advantage lies in the fact that a very powerful light may be obtained without heat radiation.

The ophtalmo-diaphanoscope consists of an eighty candle-power electric lamp, which the patient holds in his mouth, as far back as possible. This highly illuminates the retina of the eye from the back, and the surgeon, looking at it from the front, is able to make a much more satisfactory examination of the eye than was possible by means of reflected light and mirrors. Of course the examination takes place in a totally dark room, while the patient wears a black mask over his face, in order to concentrate the effect of the illumination, holes being cut in front of the eyes, through which the surgeon makes his observations. These are the essential points of the instrument; there are, however, a few other details which are also of particular interest. The illumination, which is concentrated at one end of the tube, is ten times more powerful than that which is emitted by any other lamp previously used in surgery for transmitted light. As stated above, the normal candle-power is eighty, and a moment's reflection will convince us that it would be quite out of the question to employ an ordinary lamp of this kind in the mouth, or, indeed, in close contact with any part of the body, because of the great heat which it generates. This difficulty has been surmounted by means of a continuous stream of cold water which circulates within the lamp; in the complete equipment, the water is stored in a glass reservoir supported on a column, down the hollow interior of which the fluid passes to a flexible tube which carries the stream into a lamp, through which it circulates. A similar tube carries away the waste water, which is ultimately discharged into a vessel at the base of the instrument. A necessary and ingenious addition to the apparatus is the contact signal lamp, which is fixed to the column beneath the reservoir, that is to say about on a level with the eyes of the surgeon when he examines the patient. The lamp lights automatically just before all the water is discharged from the reservoir, so that no matter how much absorbed the surgeon may become in his examination, he will be at once apprised that the reservoir is almost empty by a sudden illumination of the darkened chamber. He can then at once switch off the current from the lamp, which now that the cooling stream has ceased to flow, would become heated and cause discomfort to his patient. It should be added that the outer cover glass of the special lamp is readily removable, so that it may be sterilized after each use. Moreover, every part of the lamp may be had in duplicate, and as these are interchangable, a broken or faulty part may be at once replaced. The whole apparatus has been devised with great care, and it is claimed that even those who are unfamiliar with electric appliances may quickly become accustomed to its use.



NEW INSTRUMENT FOR EXAMINING THE INTERIOR OF THE HUMAN EYE.

The above is but another illustration of the progress which is being made in the treatment of disease. In no line has human ingenuity shown a more remarkable advance within the last decade or so. Besides the wonderful use of the X-ray, the Roentgen ray and the violet ray, we have discovered the manner of transferring skin grafted from one person to another; the transfusion of blood, the part that oxygen plays in sustaining life, etc. Could our forefathers of a generation ago return to earth, the flying machine and the wireless achievements would probably not surprise them so much as the remarkable things that we have learned about the human frame. Physiology, an eminent London physician recently asserted, is the most sensational of the sciences and it is thanks to these recent discoveries that it is so considered.

One of the recent most striking triumphs is the giving of sight to the blind. The transplantation of the cornea of a rabbit to the human eye, with retention of transparency, has been accomplished. In this amazing operation, the patient was entirely blind through measles in childhood. One eye was entirely gone: the other presented a dense whiteness over the cornea, with perception of light, but no vision. A disk was removed from the eye of a chloroformed rabbit and inserted in position upon the eye of the patient. More than four months have elapsed, the graft has grown into position perfectly, and tbe patient can see well enough to get around. The cornea is still slightly hazy, but seems to be clearing.

Of equal importance are the achievements with the new typhoid serum. Trials have shown that the patients inoculated with it develop the fever in a mild form for a week, and afterwards are immune to germs. Cholera, too, is giving way before the force of science. An absolute preventive of infection is reported from London, in the simple shape of a small piece of pure copper suspended around the neck so as to lie upon the abdomen. The attrition of the garments will insure tbe absorption by the skin of sufficient copper to render the wearer immune. This would seem to resemble a charm or fetish, but it is really a scientific prophylactic, and is recommended on the ground that cholera is unknown among the workers in copper mines. The control of this disease, which has cost humanity more lives than all the wars in the world, will be a long step forward. Malaria and yellow fever, tuberculosis, diptheria, spinal meningitis will soon be as impotent to ravage the lives of mankind as that nightmare of the past, small pox. Miracles have been accomplished in the line of surgery; in fact, there seems almost nothing that cannot be effected with the knife of a capable operator, in the way of relieving human suffering. Transplantations of healthy knee joints and other bones, and various internal organs, have been made with success. When a patient loses bis nose, a new one can be made for him. The most wonderful discovery is that the pulsation of the heart can be re-established by filling it with certain fluids, not only after the death of the animal, but actually after it has been removed and kept on ice for 40 hours.

Paper Towels.

An article of great commercial possibilities is the paper towel. It is of the same size as the ordinary domestic article, and made of soft absorbent paper whicb does not tear readily when damp. These towels are made in the form of a long roll, perforated at intervals to facilitate detachment, and after being used are thrown away. The cost of such a roll is much less than the charge which would be made by a laundry for cleaning a towel that had been in use a similar number of times. Paper napkins have long been popular, and this is an extension of the same idea. The paper contains no chemicals whicb are liable to affect the skin injuriously, and in some instances is impregnated with harmless aromatic substances.

SAVING LIFE AT SEA.

After the Bourgogne collision, in 1898, a prize was offered by the heirs of one of the victims for the best device for saving life, and it elicited many suggestions. None of them, however, appeared commercially practical to ship owners, and the result was nil, so far as benefit to the public was concerned. The Republic disaster, a few years since, in which all passengers were saved through the intervention of the wireless though the ship itself foundered, showed the invaluable services of this agent in such a light that a movement was set on foot to have the wireless system established on all passenger carrying steamers. This bas been carried out to a great extent, and it was entirely due to this help that any of the passengers of tbe Titanic were saved, as even those in the boats could not have endured long the bitter cold, tbe rising sea, and the lack of provision.

This most recent of marine calamities has likewise called forth a host of suggestions, and it remains to be seen which will prove valuable. That some reforms will be made is a safe prediction. A favorite plan is a refuge deck or similar device, in which passengers and crew can take shelter when the accident occurs, and which can be detached from the main vessel when the latter begins to sink, and will float until those within are rescued by some of the steamers which are bound to be close at hand in the much traveled lanes of tbe ocean. It is no longer believed that when the sbip goes down it will draw with it everything within a large radius. The watertigbt compartments, wbile they did not serve the purpose expected of them, at least caused the Titanic to settle so slowly that many of the passengers on deck were found floating on the surface of the sea and rescued, after tbe ship had gone down. This big life raft is advised by the famous ship builder, Lewis Nixon. Otber methods of launching life boats are all seen to be essential. The present system is clumsy and antiquated, and much too slow, taking from fifteen to twenty minutes for each boat. A new automatic davit has been suggested, which should work by electricity. The crew and passengers are expected to load the boat while she is in the chocks. When ready a button is pressed, and the chocks fall away, the boat swings outward, and both falls pay out at the same time. Neither end can go down faster than tbe other, and no matter how heavy the load, the boat cannot lower faster than the speed at which the machine is set. The davits also swing the boat clear of the side, even if the ship is leaning in the opposite direction. Another idea which seems valuable is that every section of the ship's rail, on every deck but the life deck, should be a life raft. This would always be in position where it is needed, at the side of the ship, ready to be launched when released. They are to be fitted with air chambers and grab rails, and each one is to be made capable of holding a dozen men. The sections are constructed so that they will easily fasten together to make large rafts.

The fog scout is another good idea. It is located at the extreme bow of the boat, and looks much like a submarine torpedo. If there is a fog, or there is reason to believe that ice or some other obstruction is ahead, the boat slows down and sends the scout ahead. It trails a light cable, which transmits the electric power that operates it. Its nose is so devised tbat if it touches anything, a bell rings in the pilot house on the bridge, and the ship's headway is at once checked. A dial shows the distance the scout is from the ship, also the course of the same, so that the captain may know whether it has stopped dead ahead, or on which side.

A life saving globe is also suggested. It is of steel, and cannot be upset even in launching. It would float if the ship went down under it. At a recent experiment with this device in Denmark, at the home of the inventor, the globe was cast from a high wharf into the water. It sank, but at once recovered itself and rose. It holds 25 men, and with fender anchor, 100 fathoms of steel wire rope and other devices, weighs 3600 pounds. The inventor says that in case of shipwreck these globes, which should be stationed at intervals near the edges of the lower decks, could be simply rolled off into the sea, or could be allowed to go down with the ship. They would rise promptly to the surface, and then one of the crew in charge would open a porthole in the top, raise the ventilator, which also acts as a mast, hoist a sail and steer in the direction of the nearest assistance.

But it is in the construction of the sbip itself that real safety of travel will lie in future. Anotber arrangement of the watertight bulkheads will be found advisable. In the Titanic, these bulkheads were all transverse, and all extended to the outer skin of the boat. The Titanic had, on her sides above the double bottom, a single skin only. Experience with large steel vessels colliding at the bottom has shown clearly that a double bottom is of great value. If the inner bottom skin had been carried up on the sides of the Titanic, the protection against collision with icebergs would have been much improved. The best practicable protection along this line would probably have consisted in carrying the coal in fore and aft bunkers against the side of the ship, with water tight longitudinal wing bulkheads separating the bunkers from the boiler rooms.

Longitudinal bulkheads are now in use on some fast Atlantic steamers. They have some objections, as ships equipped with them have a tendency to list when injured, but this need not be dangerous. The bulkbead must be built so that it will hold up against the pressure of the water without serious leakage, and it must have no holes in it. If it has doors, these must be closed. The doors of this type on the Titanic were arranged to drop, thus closing by their own weight. This type is open to serious objection. People who are obliged to pass through these doors are very apt to prop them open, so that they cannot be closed.

Watertight division on the horizontal lines is also recommended. This plan is common in war vessels, and would add much to the safety of passenger ships. With a tight deck at the water line, strong enough to withstand a pressure from below of thirty feet of water, and with tight bulkheads running, some to the shelter deck and some to the saloon deck, the Titanic could have every compartment below the water line ripped open, and yet she would have floated, the watertight deck forming a new bottom —a kind of protective deck. Another point in which the construction of war vessels could profitably be imitated, is in the size of the rudders, twice as large as those fitted on merchant ships of the same size. It is obvious that the turning powers of ships are greatly increased by the size of their rudders, and the unwieldiness, which is a serious problem in these giant vessels, correspondingly diminished.

A measure which might really render ships unsinkable, was recently tested on the U. S. S. North Carolina. It consists of applying compressed air in such a manner as to plug the inrush of water through holes in the bottom or sides of the hull. The idea is not new, but in the recent experiments it was tested by engineers familiar with the latest compressed air practice in tunnel and caisson work. The important feature of the method is the graduated pressure of air exerted in the compartments surrounding the punctured compartment. If a vessel has a draft of, say, thirty feet, the aplication of sufficient pressure to keep the water from entering a hole near the bottom of the hull would subject the upper decks to considerable strain. When, however, a hole is punctured in the lower portion of the hull, and the air pressure required by the hydrostatic pressure is exerted to keep the water out, the compartments immediately above and around the punctured compartment are reinforced by a lighter air pressure, and these are in turn supported by applying a still lighter pressure to the next surrounding compartments. This, it is claimed, prevents the straining of decks, bulkheads, etc.

In the experiments on the battleship the sea cocks were opened and the water allowed to rush in and fill one compartment, the vessel listing to starboard. Compressed air was then forced into tbe compartment and air of a lighter pressure pumped into all the surrounding compartments, thus keeping the decks, etc. safe. A still lighter pressure was exerted in the next adjoining compartments. This new method, it is predicted, will revolutionize the business of saving ships.

NEW PATENT LAW RECOMMENDED.

Taft Urges Changes in Statutes Governing Patents.

President Taft has sent to Congress a special message asking for a commission to investigate and study the patent laws with a view to revision. It is as follows:

"To the Senate and House of Representatives:

"The present patent laws of the United States were enacted in practically their present condition in 1870, before the development of the industrial conditions which obtain today. The wisdom of the framers of the Constitution in providing that Congress shall have the power to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries has been demonstrated by the fact that the industrial progress and development of the United States has been due largely to the stimulus to invention given by the protection afforded by the patent laws.

COMBINATIONS FORMED.

"In recent years, however, combination based upon patents have been formed which have succeeded in controlling very largely the output of particular industries, and this control has been extended by contracts based upon the patents, requiring the users of patented machines to buy from the corporations owning the patents, or from firms under their control, supplies or other articles to be used in connection with the patented machines.

"Some of the circuit courts of appeal have held that such contracts, based upon patents, were valid, and that those who violated the terms of such contracts were liable as contributory infringers. The correctness of such decisions has recently received the approval of the Supreme Court of the United States in the case of Sidney Henry, et al. vs. A. B. Dick Company, by the vote of four justices of the seven who heard the case.

"An application for a rehearing of that case by the full bench was made and denied, so that the construction put upon the existing law in that case must be regarded as conclusive. Several bills have been introduced into Congress, as I am informed, to obviate the effect of this decision so as to prevent a patentee from extending by contract the monopoly secured to him under the patent law. This question calls for careful consideration.

INDUSTRIES ARE DOMINATED.

"Again large corporations by absorbing patents relating to particular arts have succeeded in dominating entire industries, and the only market to which an inventor of improvements upon such machines may offer his patents for sale is to such corporations. In many instances it is charged corporations buy patents for improvements and, although the inventions covered thereby constitute a distinct improvement in the art, their manufacture is suppressed and the public never receives the benefit of such inventions during the life of the patent.

"Some other countries have discouraged the shelving of inventions in this manner by laws requiring that the owner of a patent shall manufacture the invention covered by his patent within a certain period, or that his patent shall be declared forfeited. Other countries provide that the owner of a patent who does not manufacture the invention in the country granting it, within a reasonable time, may be compelled to grant a license to any one who may apply to manufacture and sell the invention upon such terms as may be determined to be reasonable by a public officer or by a court of competent authority.

WORTHY OF CONSIDERATION.

"It is worthy of careful consideration whether or not legislation on some such lines should be enacted to prevent our patent laws from being made the basis of unjust monopoly, extending beyond the legitimate protection to inventors required to promote science and the useful arts, or the means of stifling improvement and progress of the arts.

"It is also claimed by some that legislation is necessary to enable an applicant to more speedly obtain his patent, and also to prevent the holding of applications for patent in the United States Patent Office for a long period of time, until the particular art to which the patent relates has grown up.

"Certain amendments to the patent laws are required to make effective the provisions of the convention of the International Union for the protection of Industrial Property, held at Washington, and signed June 2, 1911.

COMPLAINTS REGISTERED.

"Much complaint has been made that patents granted by the United States are not deemed prima facie valid by the courts and that preliminary injunctions are granted only upon patents which have been adjudicated to be valid by the courts or those whose validity has been prima facie established by public acquiescence for a considerable period of time.

"It is urged that the laws should be revised in such a manner that the issuance of a patent by the United States will carry with it the prima facie force and effect of a valid patent, and the burden placed upon him who would infringe that patent, to establish its invalidity, rather than, as at the present time, to require the patentee to establish the validity of his patent before obtaining a preliminary injunction or an award of damages for the intentional infringement of his patented invention.

"Great care should be taken in any revision of the statutes relating to patents and patent rights not unduly to interfere with vested interests which have been properly created under the existing laws, or to impair the efficiency of a system from which so much benefit has been derived by the country.

"I am of the opinion that a careful study of the patent laws should be made by a commission of qualified persons appointed for that purpose with instructions to report such revision of those laws as may be necessary to harmonize them with the best thought and needs of our time, and I, therefore, recommend the enactment of a statute authorizing the President to appoint a commission to investigate the present state of the patent law, and to report what, if any, changes or amendments should be made to conform that law with modern conditions and requirements.

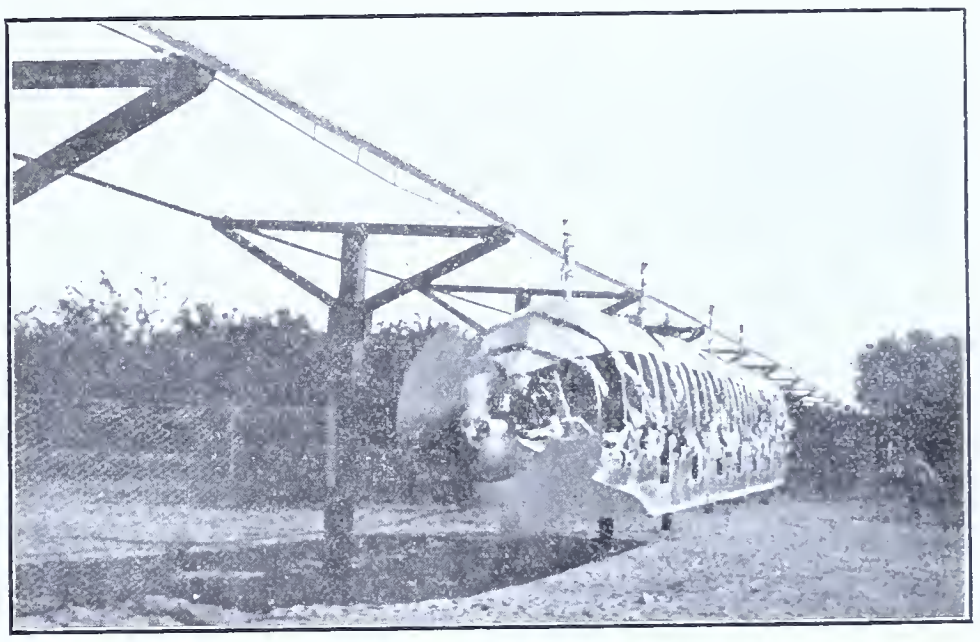
(Signed) "WILLIAM H. TAFT,

"The White House, May 10, 1912."

AERIAL TROLLEY CAR.

An electric or gasoline motor-driven aerial trolley car may be seen in operation in the accompanying illustration—the latest achievement in mechanical devices for transporting passengers, whether for short or long distances. It is said that the ease with which it runs does away with all jarring or shock.

In this car, running from twenty-five to fifty miles an hour, one can rest and read with as much comfort as if sitting in an easy chair. There is no swing to the car while in motion and running at a speed of twenty-five miles or more an hour, the bottom of the car being so shaped that it breasts the air as a sailing ship rides the waves, thus taking some of the weight of the car off of the rail. The car somewhat resembles a torpedo half out of the water, and is constructed of steel rods, with the bottom, sides and top covered with aluminum, which, it is necessary to say, is remarkable for its durability. The car has a length of fifty feet and a width of six feet, and is seven feet in height from the floor to the center of the ceiling. It weighs a ton and has a seating capacity of fifty-six passengers. The weight of the car is suspended from the rail, with grooved wheels with ball bearings running on top and underneath the rail, making it impossible for the car to "jump the track," if the expression may be permitted.



CAR IN MOTION.

The car is provided with an emergency brake, which is applied underneath the rail, and is capable of bringing the car to a dead stop when the power is shut off. The most interesting part of the whole mechanism is the propeller, technically termed a fan, which is composed of two blades and operates to propel the car just as a screw forces a boat or steamer through the water.

It is maintained that the greater the number of revolutions of the fan per minute, the faster will be the speed of the car, the power being furnished by either a gasoline or electric motor. For demonstration purposes, on a line 840 feet in length, a gasoline motor of twenty-five horsepower is being used to run the fan, the two blades measuring respectively fifteen inches in width and six feet from tip to tip. The motor has never exceeded two hundred and fifty revolutions per minute, yet great speed has been attained in this short distance with the car loaded with passengers. Although the length of the line is not enough to definitely test the device, the speed is estimated at twenty-five miles an hour.

It will be seen that the poles are of structural iron made in the form of a double T. The arm on the top (which is braced, as is also the arm at the bottom,) will carry two rails, making a double track system, and the arm at the bottom will be laid in concrete, so that there is no strain or possible chance for the poles to get out of plumb. It is pointed out that the construction of an aerial trolley line is a simple matter, for however uneven the surface over which the line is to pass, the grading will be accomplished by varying the length of the poles. The life of the poles, it is said, will in a measure depend on how well they are preserved by being kept painted to prevent rust.

There is attached to the trolley an automatic oiling apparatus, which prevents rust and wear of the apparatus, as well as makes the car run easier. The car can be lowered to the surface for letting off and taking on passengers, and raised again to the rail by its own power, whatever the height from the ground. In the demonstration of this car, it has been shown that it will do the same work, with greater speed, as an electric car, for about one-sixth of the power, both cars carrying the same number of passengers. One advantage claimed is that the aerial car will start more quickly and attain a higher rate of speed in a given distance than cars run on the present electric system. The cost of building an aerial trolley line, double track system, has been estimated at $15,640.70 per mile, of which $8800 is for poles and $2112 for rails, the rods costing $2000 and the cement about $228.70. The above figures are based on the amount of money expended in the building of the line for demonstration purposes, but in the construction of a regular line, from ten miles to a hundred in length, these figures could be considerably lowered.

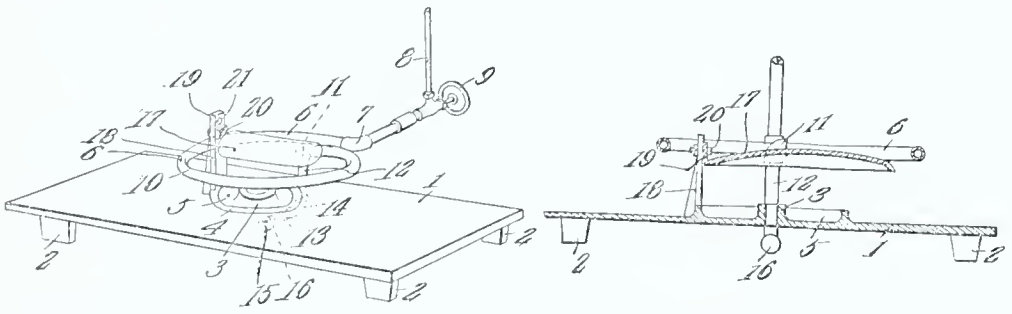
For inter-urban travel, this contrivance is claimed by its inventor to be the ideal means of rapid transit. The aerial trolley car is not only held to be practical and economical in construction and operation, but absolute safety of passengers is assured, with freedom from dust and jarring.

CLEVER NEW PATENTS.

LIQUID FUEL BURNER.—AUTO-DRIVE BOAT.—ANIMAL TRAP.—HORSESHOE.

Liquid Fuel Burner.

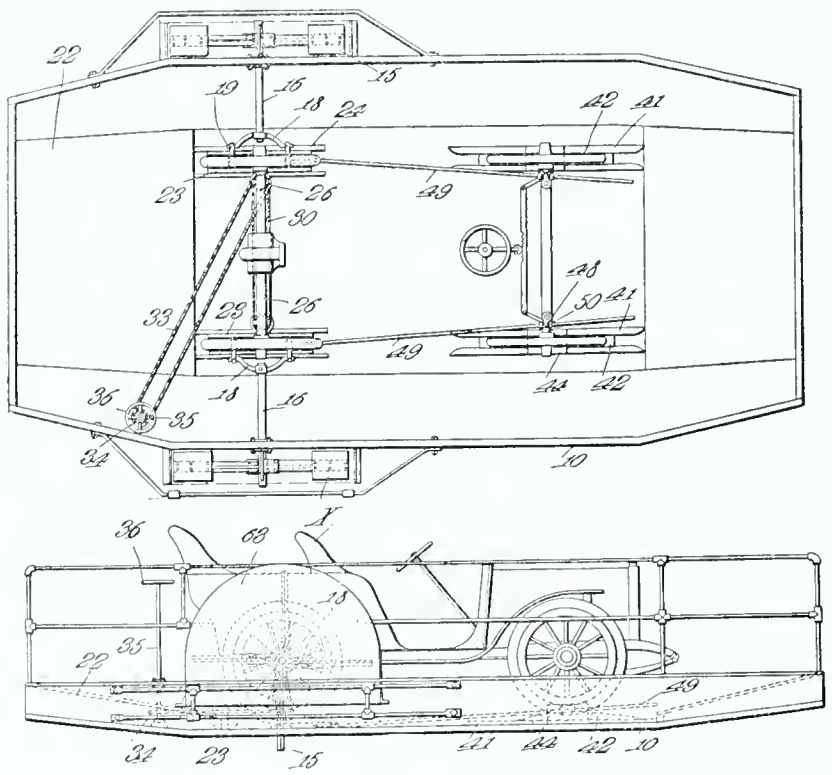
With the growing use of gasoline, alcohol, kerosene and similar liquid fuels, has come the demand for appliances for ensuring their proper combustion. A burner which readily generates the gas, producing a broad flame, and effectively mixing the air and oil has been patented by Mannin Gross, of Council Grove, Kansas, and is shown herewith, in perspective and in sectional elevation. The base plate has a tube, the orifice of which opens through the base, and in which the hydrocarbon and air mix. A pan 5 contains the oil or alcohol for heating. A pipe coil 6 connects with the hydrocarbon supply, and



a pipe 13 delivers the liquid fuel to the mixer 3. A deflector 17 is arranged in vertical alinement with the mixer, and serves to spread the flame in a broad white, smokeless sheet. The deflector can be raised or lowered as desired. When the fuel in the pan has been ignited, the generator coil 6 will become suitably heated for the conversion of the liquid into gas. This vaporizing takes place at a point about midway the pipe coil, the gas escaping through the jet 15 in the end of the pipe 13, up into the mixer where it is mingled with a suitable amount of air to aid the combustion. The gas is ejected against the deflector and the sheet of flame fills the combustion chamber of the stove, thus providing for effectively heating the same for cooking.

Auto-Drive Boat.

The man who hitches his automobile to a threshing machine, or who makes it supply the power for pumping, wood cutting, and various other industrial operations, is familiar to readers of the daily press. An extension of the same idea is the use of the automobile to propel a boat. John W. Freeman, of Joplin, Mo., has devised an arrangement of this kind, in which the machine may be run onto the boat and the driving wheels connected to the wheels or screw of the vessel, and the whole started, steered and stopped by the chauffeur

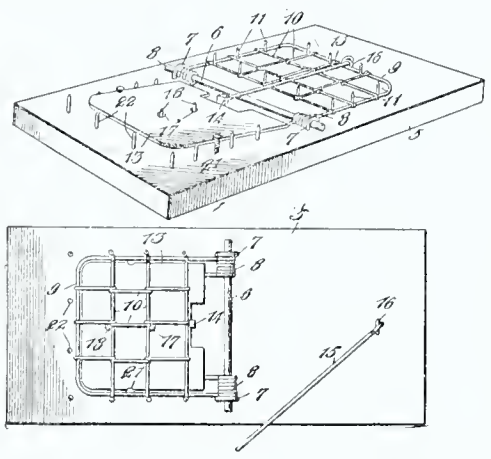


just as he would drive an auto on the road. The boat shown in the drawings has side paddle wheels, although a screw or other device may be used. The wheel shafts have arms 18 with pivoted fingers 19, covered with rubber and designed to engage the driving wheels of the auto and impart the rotation of the latter to the paddle wheels. When the auto is driven onto the boat until the rear wheels rest on grooved brake blocks 23 (which slide lengthwise), the driving shaft of the auto is in vertical alinement with the axes of the shafts 16, but is below them. The axle rests directly above screw jacks, which, by means of a sprocket wheel and link belt, operate to raise and lower the wheels of the machine. This brings the rear axle into full alinement with the propeller shafts, when the fingers engage the spokes.

Guides at the bow receive blocks 42, adjustable to accomodate machines of varying lengths, and recessed to receive wheel-supporting shoes 44, which are shaped to engage the opposite sides of the tire and felly. The front wheels of the auto rest in these shoes, and as the latter are pivoted to the blocks 42, they will be turned when the steering wheels are turned, and the chauffeur may manipulate his steering wheel in the same manner as he would if on land, turning the front wheels and the shoes. This movement of the shoes is transmitted through rods to the brake blocks 23 of the rear wheel, and one of said blocks is moved into engagement with one of the rear driving wheels, while the other block moves away from the mating wheel. The steering device may be turned so as to exercise braking pressure on the driving wheels, retarding the latter. The paddle wheel to which the driving wheel is connected will then run slower than the other paddle wheel, and the latter will, therefore, turn the boat to right or left as the case may be. Instead of using the rods 49 as tension members to draw the brake blocks against the wheels, they may be used to force braking devices against the same.

Animal Trap.

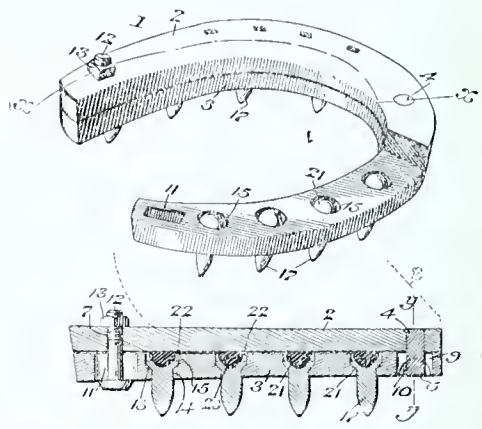
A device that is effective not only for rodents, weasels and the like but for birds, and that instantly kills its victim, has been recently patented by Jacob A. Fulks, of Water Proof, La. It does not operate for larger animals, and can be used with or without bait. From the drawings, which show a perspective and top plan of the trap, it will be seen that a bar is attached to the base, and coiled springs are arranged on the bar, the wire being connected to form a U-shaped jaw 9. To



this jaw the intersecting wires 10 are secured, the ends forming spurs which project up and pierce the body of the animal caught. A pivot rod is attached to the base, and has pivoted thereon a trigger plate 13, which has a catch to engage a restraining rod 15 pivoted to the base. Spikes 18 extend through slots in the trigger plate and on the spikes are coiled springs, removably attached to the base and exerting a pressure upon the plate, which is limited by stops 21. Spikes 22 are also arranged around the plate. To use the trap, the trap jaw is adjusted as seen in figure 1. The restraining rod is fixed on the jaw and the free end disposed beneath the catch of the trigger. When trapping large animals, the trap is covered with brush, but for hawks, etc., bait is fixed on the spikes 18. When the animal steps on the trigger, the catch will be disengaged from the restraining rod and the trap jaw will be forced down on the trigger between the row of spikes 21. The spurs 11 pierce the animal's body and the jaw impales the victim on the spikes so that it is killed. The stops and springs can be adjusted for animals of different sizes.

Horseshoe.

In the horseshoes with calks now in use, it has been found hard to keep the calks sharpened, and attempts have been made to provide a cushion for the shoe to render it easier for the horse. In shoes formed of two sections it has been found difficult to hold the sections firm. An invention designed to overcome these defects has been made by Geo. B. Kyle, Philadelphia, Pa., and is shown in perspective and in section in the accompanying cut. The inner or main section is intended to be secured to the hoof of the horse, and has openings 7 back of hoof. The outer section 3, which is removable, has a slot 9 at the toe, adapted to connect with a pin 4 in the inner section. When it is desired to put the sections together, the slot passes the elongated head 5 of the pin, and the section 3 is turned on the pin until the wall of the head 5 engages the walls of the slot to lock the sections. The walls of both parts are inclined, so as to cause a wedging action. Bolts 12 pass through



slots in the heel of the outer section, and also through the openings at the back of the inner section, and engage nuts, to hold the heel portions of the sections together. Calks are carried in openings of the section 3, and engage the countersinks, so that the calks cannot pass through the openings. Depressions in the calks receive resilient bearings 21 which consist of rubber balls. A space is left between the top of each calk and the inner face of the section, so that movement of the calks is allowed and thereby the balls serve as resilient bearings for the calks, the effect of which is evident.

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

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G. HEILEMAN BREWING CO. v. INDEPENDENT BREWING CO.

(Circuit Court of Appeals, Ninth Circuit. Nov. 6, 1911. 191 F. R. p. 489.)

1. TRADE-MARKS AND TRADE-NAMES—EQUITY — SUIT FOR INFRINGEMENT — UNFAIR COMPETITION—PLEADING—JOINDER.

A bill, alleging the imitation by defendant of complainaut's label, registered as a trade-mark, and that defendant has placed on its own goods labels in so nearly the exact form and configuration of complaiuants as to deceive purchasers and induce them to purchase its goods as those of complainant, states a cause of action for unfair competition as well as for infringement of trade-mark, which causes may properly be joined.

2. TRADE-MARKS AND TRADE-NAMES—SUIT FOR INFRINGEMENT—RIGHT TO MAINTAIN.

The fact that a label registered as a trade-mark, as used by the proprietor, has thereon a notice of copyright, even if such notice misrepresents the fact, does not constitute such a misrepresentation as could mislead or defraud the public or purchasers of the goods on which the label is used, and does not affect the right of the owner to maintain a suit for infringement of its trade-mark or unfair competition by imitation by such label by another.

3. TRADE-MARKS AND TRADE-NAMES—SUIT FOR INFRINGEMENT—PLEADING.

The fact that a label registered as a trade-mark, as used by the proprietor, does not bear the notice of registration required by Act Feb. 20, 1905, c. 592, § 38, 33 Stat. 730 (U. S. Comp. St. Supp, 1907, p. 1286), which provides that in a suit for infringement no damages slall be recovered by a party failing to so give notice "except on proof that the defendant was duly notified of infringement and continued the same after such notice," does not render a bill for infringement demurrable where its allegations are ample to let in proof under the exception.

4. TRADE-MARKS AND TRADE-NAMES—VALIDITY OF TRADE-MARK—USE PRIOR TO REGISTRATION.

Under Trade-Mark Act Feb. 20. 1905, c. 592, § 2, 33 Stat, 724 (U. S. Comp. St. Supp. 1909, p 1276), which requires proof of use of a trade-mark, such as to give the applicant the exclusive right thereto to entitle it to registration, the use of a label prior to its registration as a trade-mark does not constitute a publication which invalidates the trade-mark.

5. TRADE-MARKS AND TRADE-NAMES — INFRINGEMENT—IMITATION OF LABEL.

Exact simulation of a label constituting a trade-mark is not necessary to infringement, but it is sufficient if the resemblance is such as to deceive an ordinary purchaser giving such attention to the same as such a purchaser usually gives.

6. TRADE-MARKS AND TRADE-NAMES—INFRINGEMENT—IMITATION OF LABEL—PLEADING.

A bill for infringement of a trade-mark, consisting of a distinctive label used on bottles containing beer made by complainant designated "Old Style Lager," which set out the original and alleged infringing labels, held to show on its face such intentional similarity between the two labels as to constitute infringement.

GENERAL ELECTRIC CO. v. CONDIT ELECTRICAL MFG. CO.

(Circuit Court, D. Massachusetts. Oct. 24, 1911. 191 F. R. p. 511.)

1. PATENTS—SUIT FOR INFRINGEMENT-PRELIMINARY INJUNCTION.

Where, in a suit for infringement, although the patent has been adjudged valid in a prior suit, an entirely new issue as to anticipation is raised and supported by testimony which is convincing if credited, unless such testimony is clearly impeached by complainant, his right is too doubtful to warrant the granting of a preliminary injunction.

2. PATENTS — INFRINGEMENT — WHAT CONSTITUTES.

The violation of the sole right of a patented article cannot be justified by a special use, nor by an entire nonuse of the infringing article.

3. PATENTS—VALIDITY AND INFRINGEMENT ELECTRIC SWITCH.

A preliminary injunction against Infringement of the Hewlett & Emmet patent, No. 800,916, for a removable oil can, high potential electric switch denied, but granted as to the Emmet & Hewlett patent, No. 789,597, for a high potential switch.

NATIONAL CLOAK & SUIT CO. v. STANDARD MAIL ORDER CO.

(Circuit Court, S. D. New York. Oct. 30, 1911. 191 F. R. p. 528.)

COPYRIGHTS-INFRINGEMENT-MANUFACTURERS' CATALOGUES.

A manufacturer of unpatented articles cannot practically monopolize their sale by copyrighting a catalogue containing illustrations of them; nor can another manufacturer of identical articles be deprived of the right to illustrate them in his catalogue, providing his illustrations are not in fact copied from the copyrighted catalogue.

HERMAN v. YOUNGSTOWN CAR MFG. COMPANY.

(Circuit Court of Appeals, Sixth Circuit. Nov. 7, 1911. 191 F. R. p. 579.)

1. PATENTS — ADAPTATION FROM ANOTHER ART.

Whether or not the transfer of a device from one art to another, and its adaptation to use therein, involves patentable invention, is essentially a question of fact.

2. PATENTS-VALIDITY AND INFRINGEMENT—APPARATUS FOR MAKING BLUE PRINTS.

The Herman patent, No. 777096, for an apparatus for making blue prints, claims 12 and 13 were not anticipated and disclose patentable invention in the hydraulic cylinder for regulating the lowering of the lamp into the printing cylinder. Such claims also held infringed by the device of the Wagenhorst patent, No. 765,406.

3. PATENTS — CONSTRUCTION OF CLAIMS—SUFFICIENCY OF DESCRIPTION.

A claim of a patent which specifies as one of the elements of a combination a hollow piston rod is not invalid because it does not mention a piston, which is necessarily implied. Typographical errors may be disregarded.

4. PATENTS--VALIDITY OF CLAIMS—COMBINATIONS.

A claim of a patent made up by adding to the combination of another claim an element not the invention of the patentee is not therefore invalid.

5. PATENTS—INFRINGEMENT—EVIDENCE—GRANT OF LATER PATENT.

A patent is not the grant of a right to make or use or sell, nor is any such right implied directly or indirectly, but is a grant only of the right to exclude others; hence the grant of a later patent is evidence only that a patentable difference exists between the device shown and that of a prior patent, and not that it does not infringe the earlier patent unless the latter has been construed as specific and not generic as to the later structure.

6. PATENTS—INFRINGEMENT—EVIDENCE-ACTION OF PATENT OFFICE.

The failure of the Patent Office to declare an interference between co-pending applications is of little if any evidential force on the question whether the device of one is an infringement of the other.

7. PATENTS —INVENTION COMBINATIONS.

Assembling of old elements in one structure is not an invention, unless they thereby acquire a new combination function. Claims 16 and 17 of patent No. 777,096 held invalid.

8. PATENTS-VALIDITY OF CLAIMS-FEATURE NOT DESCRIBED.

A claim of a patent depending for its validity upon a feature not disclosed by specification or drawing is invalid. So held of claim 18, patent No. 777,096.

9. PATENTS — INVENTION—APPARATUS FOR MAKING BLUE PRINTS.

The Herman patent, No. 721,041, for an apparatus for making blue prints, 32 and 33, held void for lack of patentable invention.

10. PATENTS—INFRINGEMENT — APPARATUS FOR MAKING BLUE PRINTS.

The Herman patent, No. 743,160, for an apparatus for making blue prints, claim 7, held not infringed.

11. PATENTS—SUIT FOR INFRINGEMENT—EFFECT OF INVALID CLAIMS—DISCLAIMER.

Where some of the claims of a patent are held invalid in an infringement suit, the complainant must file a disclaimer as to such claims before being entitled to a degree for infringement of others.

FRIED. KRUPP AKTIEN-GESELLSCHAFT v. MIDVALE STEEL CO.

(Circuit Court of Appeals, Third Circuit. Oct. 11, 1911. 191 F. R. p. 588.)

1. PATENTS — SUITS FOR INFRINGEMENT—BURDEN AND MEASURE OF PROOF.

Infringement of a patent is not only a question of fact, but is a tort or wrong, the burden of establishing which, as in all torts, clearly rests on those who charge such wrong; and the absence of actual fact proof is not met by the presence of expert speculations, no matter how voluminous.

2. PATENTS—NATURE OF PATENT—PATENT AS CONTRACT.

An American patent is a written contract between an inventor and the government. This contract consists of mutual interrelated considerations moving from each party to the other for such contract. The consideration given on the part of the inventor to the government is the disclosure of his invention in such plain aud full terms that any one skilled in the art to which it appertains may practice it. The consideration on the part of the government given to the patentee for such disclosure is a monopoly for 17 years of the iuventiou disclosed to the extent of the claims allowed in the patent.

3. PATENTS—INFRINGEMENT—PROCESS PATENTS.

The test of infringement of a process patent is not identity of a product which is not patented, but identity of patented process in producing an uupatented product.

4. EVIDENCE—PATENTS-SUIT FOR INFRINGEMENT-PROVINCE OF EXPERT TESTIMONY.

It is only where a court requires the explanation of technical terms or the language of any particular art to enable it to understand the specification of a patent that the testimony of those expert in the art is pertinent. The province of such expert testimony is to remove uncertainty where the terms used are obscure, and not to create uncertainty where the language is plain.

5. PATENTS—NOVELTY—PROCESS OF MAKING ARMOR PLATES.

The Schmitz and Ehrensberger patent, No. 534,178, for a process of manufacturing armor plates, has for its principal element of novelty the therein described process of carbonizing one side of the plates by the use of hydrocarbon gas in an intra-furnace chamber of speoified form, as embodied in the four first claims. Claim 5, which covers the carbonizing of the plates, when placed in the same intra-furnace chamber, by filling the space between the two plates into which the gas is forced in the gas process with solid carbon, discloses only a duplication of the process of the prior Harvey patent, No. 460,262, by stacking one plate upon another, and thus carbonizing two at the same time and by the use of the same charcoal, instead of treating one at a time as in the Harvey process, and is void for lack of patentable novelty.

6. PATENTS—INVENTION—PROCESS FOR IMPROVING QUALITY OF ARMOR PLATES.

The Schmitz patent, No. 642,926, claim 1, for a process of improving quality of armor plates by subjecting them to a treatment by reheating after their production by any one of the known processes of manufacture, for the purpose of producing what is known as a "fibered" structure in the steel, describes simply an annealing process, which is old, and is void for lack of invention.

7. PATENTS — PROCESS PATENTS — CLEARNESS OF DISCLOSURE ESSENTIAL.

In a process patent, the teaching of the specification and the disclosure by the patentee must be such that, after the patent has expired, a user thereof shall not be left to the blind groping of experimental work, but by the plain teaching of the specification be enabled to use the process with certainty.

8. PATENTS-INFRINGEMENT-EFFECT OF PROCEEDINGS IN PATENT OFFICE.

A patentee cannot make an infringement of the thing from which he differentiated his invention in order to obtain his patent.

9. PATENTS — INFRINGEMEMT — PROCESS OF HARDENING ARMOR PLATES.

The Ehrensberger patents, No. 651,965 and No. 653,413, both relating to a process for hardening and toughening armor plates by what is known as differential heating of the two sides, construed, and claims 1 and 3 of each patent held not infringed.

10. WORDS AND PHRASES—"ANNEALING."

"Annealing" is the process used to render glass, iron, etc., less brittle by allowing them to cool very gradually from a high heat.

11. WORDS AND PHRASES—"FIBROUS."

"Fibrous," as used in the steel making art. is a generic term to denote a condition in contrast to the crystalline state. The "fibrous" state is obtained by annealing.

EDWARD HILKER MOP CO. v. UNITED STATES MOP CO et al.

(Circuit Court of Appeals, Sixth Circuit. Nov. 7, 1911. 191 F. R. p. 613.)

1. PATENTS—INVENTION — SELF-WRINGING MOP.

The Hilker patents, No. 744,196, claim 1, and No. 758,753, claim 1, each for a combined mop and wringer, are void for lack of patentable invention in view of the prior art, and especially of a patent No. 716,417 to the same patentee.

2. TRADE-MARMS AND TRADE-NAMES—UNFAIR COMPETITION-WHAT CONSTITUTES.

Nothing less than conduct tending to pass off one man's business or merchandise as that of another will constitute unfair competition, and similarity of circulars sent by a defendant manufacturer to its agents and prospective agents to those sent by complainant to its agents is not sufficient to constitute unfair competition, where the contents of the circulars were such that they were not likely to be shown to ultimate purchasers of the article.

3. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION.

The adoption by one manufacturer of the characteristic features of another's product, common to articles of that class, does not of itself amount to unfair cometition.

WENDE v. HORINE.

(Circuit Court, N. D. Illinois, E. D. Oct. 20, 1911. 191 F. R. p. 620.)

PATENTS—SUIT TO OBTAIN PATENT—PARTIES—EFFECT OF ASSIGNMENT BY INVENTOR.

The assignment by an applicant for a patent of all his right aud title to the invention is effective aud carries with it the right of the assignee to the patent when issued without express direction for its issuance to him and leaves no title, legal or equitable, in the assignor; but under the provisions of Rev. St. § 4895 (U. S. Comp. St. 1901, p. 3385), that notwithstanding an assignment an application for a patent shall be made by the inventor or discoverer, and of section 4915 (U. S. Comp. St. 1901, p. 3392), that a suit in equity to obtain a patent shall be brought by the "applicant," the inventor may maintain such a suit in his own name, notwithstanding his assignment of his rights.

AULT & WIBORG CO. v. CHESHIRE et al.

(Circuit Court, S. D. Iowa, C. D. July 21, 1909. 191 F. R. p. 741.)

TRADE-MARKS AND TRADE-NAMES—NAMES SUBJECT TO OWNERSHIP—DESCRIPTIVE TERMS.

The name "No Wash Up," as applied to a preparation for use on printing rollers and lithographing plates to obviate the necessity of washing the same after use is descriptive, and its use by one manufacturer gives him no exclusive right, nor right of action to enjoin its use by another as the name of a different preparation used for the same purpose, where the two are clearly distinguishable by their odor, the shape and appearance of the cans in which they are put up for sale, and by the labels, and there is no attempt by defendant to sell its product as that of complainant

HURD et al. v. SEIM et al.

(Circuit Court of Appeals, Second Circuit. Nov. 20, 1911. 191 F. R. p. 832.)

PATENTS—INFRINGEMENT-EFFECT OF PRIOR ADJUDICATION.

A decree in a suit for infringement by the owner of a patent against the manufacturer of an alleged infringing article, adjudging the patent void, not appealed from, frees the product of the defendant from the monopoly of the patent, and purchasers of the same may resell or use such product anywhere in the United States, without being subject to suits for infringement by the owner of the patent or any one in privity with it.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Charles E. Fanning, Davenport, Iowa. Folding Perambulator.—The present invention has for its object to provide a perambulator, adapted to be quickly operated to fold it or to arrange it for use. The perambulator consists essentially of a running gear baving longitudinal rock shafts, front and rear wheels mounted on the rock shafts and foldable beneatb the running gear, front and rear pivoted standards, a body having a frame connected with tbe standards, means operated by the standards for rotating the rock sbafts, and a pivoted handle arranged to oscillate the standards. The body of tbe perambulator has a back connected with the rear standards and foldable upon the seat, and tbe sides are foldable inwardly upon the back. When the perambulator is folded, it occupies but a small space and may be conveniently carried, stored or sbipped.

Harry C. Stickel, Star Junction, Pa., inventor; Robert M. Pollock, same place, assignee of the first patent. Two patents.—It is tbe aim of the invention of tbe first patent to provide an adjustable extension for piano pedals, whicb may be readily applied to the same, so as to be easily adjusted to arrange its foot-receiving portion at the desired elevation. It comprises a tubular stem split at tbe lower end, the severed portions being flattened and bent into approximately U-shaped pedal-engaging jaws having horizontal inwardly extending bottom portions and depending terminal lugs located at the inner ends of said bottom portions, a screw piercing the lugs and having a shoulder engaging one of the same, a nut engaged by the screw and fitting against the other lug and having its upper edge engaged by the horizontal portion of tbe contiguous jaw, wbereby it is held against rotary movement, a collar encircling the standard contiguous to the upper end of the piano pedal, a foot plate having a stem slidable within tbe tubular standard, and means mounted on the standard and engaging the stem for securing the foot plate in its adjustment.

The second patent relates to a car truck. Heretofore wben the springs of a car truck became weakened and permitted the bolster to sink and caused the car coupling to drop below its normal position and interfere with the proper coupling of the cars, it has been the practice to interpose a board between tbe springs and tbe bolster for elevating tbe latter. Tbe car truck of the present invention is equipped with means for enabling the springs and the bolster to be readily adjusted in a vertical direction to hold tbe same at the proper elevation to maintain the car coupling at the standard height. Tbe car truck includes side frames provided with openings, a truck bolster baving its ends arranged in the openings of tbe frames, springs supporting the bolster, and adjusting means mounted on the side frames at the bottom of the openings for raising the springs and the bolster.

William W. Terriff, Portland, Mich. Two patents.—The first patent covers gearing for washing machines adapted to be operated by continuous rotary movement of a hand wheel or similar operating means, and capable of raising and lowering and of reversely rotating a combined rubbing and squeezing device, wbereby the clothes will be washed by both the rubbing and squeezing operation. The gearing causes the combined rubbing and squeezing device to descend gradually upon and yieldably engage the clothes instead of permitting such device to drop abruptly to the bottom of tbe tub and jar or stop the gearing.

Tbe second patent relates to a leg lifting caster device for washing machines. Tbe device is adapted to be readily operated to permit the legs of a tub or otber object to rest upon the supporting surface, and to arrange tbe casters for supporting the tub to permit the same to be readily moved from one place to another. It is also tbe object of tbe present invention to arrange tbe parts so tbat the device will connect and brace the legs at the lower ends tbereof wben the legs are subjected to the lateral strain incident to moving the tub from one place to another. The device comprises in its construction bars movable upwardly and downwardly and connected with the lower portions of the legs and forming braces for the same, antifriction devices carried by tbe bars, operating means for moving the bars downwardly, a latch for locking the bars at the limit of tbeir downward movement, and a spring for automatically moving the bars upwardly.

John H. Tbroop, Evansville, Ind., inventor; George Lennert, same place, assignee. Sad Iron Handle. — The present invention is designed to provide for sad irons a handle, which will be much cooler and less liable to become heated than the usual handle. It is also tbe aim of tbe invention to provide a resilient sad iron handle adapted to increase tbe ease with wbich a sad iron may be used, affording a clear view in advance and in rear of the sad iron bottom to obviate the necessity of bending the neck and shoulders for this purpose. The sad iron handle consists of a horizontal tubular handle member provided at intervals witb openings, and having downwardly and inwardly extending terminals provided with front and rear sockets, and crossed inclined tubular supporting members provided at intervals witb openings and having their terminals secured in tbe said sockets and in sockets of the sad iron body. The supporting members leave open spaces between the tubular bandle and the sad iron at the front and back thereof.

Charles S. Waybright, Staunton, Va. Three patents.—The first patent relates to tbat type of bame fastener employing a chain and a pivoted pawl for engaging tbe links to afford an adjustable connection between the hames. It consists of a casing provided witb means for connecting it with one of a pair of hames, a transverse roller mounted within the casing, a chain provided with means for connecting it with tbe other one of a pair of hames and extending through the casing and arranged on the said roller and composed of relatively short links consisting of cylindrical eyes and narrow slots spaced from the eyes by a solid intermediate portion, and a spring-actuated pawl or catch pivotally mounted in the casing and directly engaging the chain and holding the same against the roller, tbe engaging portion of the pawl or catch being of the same width as the chain and extending entirely across tbe intermediate portion of tbe links and being of substantially the same thickness as the space between the eyes of tbe chain and filling the slots.

The second patent covers a churn equipped with means for suspending the dasher close to the bottom of the churn body out of contact with the same. It is capable of permitting the dasher to be quickly removed, and it also supports the dasher in an elevated position. The churn comprises a bearing bracket provided with a supporting portion having a vertical bearing opening extending upward and open at tbe bottom, the said bearing bracket being also provided at a point intermediate of tbe ends of the said opening with a horizontal threaded opening, a vertical shaft extending into the vertical opening, an upper shaft section located within the said bearing opening, an anti-friction ball interposed between the vertical shaft and the upper shaft section, a coiled spring located within the bearing opening and engaging the upper end of the upper shaft section for yieldably maintaining the ball in contact with the upper end of the vertical sbaft and adapted to permit the latter to be raised, a clamping screw mounted in the threaded opening of the bearing bracket to engage either the upper sbaft section or the vertical shaft. and gearing for actuating the vertical sbaft.

The third patent relates to a churn equipped with an adjustable dasher adapted to be readily arranged at tbe proper elevation to suit the quantity of cream to be churned, and capable after the operation of churning has been completed to be quickly elevated to the proper position for gatbering the butter. Tbis churn comprises a support having upper and lower spaced bearing arms, a vertically adjustable dasher having transverse perforations arranged at intervals, a stationary washer seated on the upper arm of tbe support and forming a metallic bearing and having an opening receiving tbe stem of the dasher. and a rotary supporting and locking device consisting of a pin adapted to be arranged in any of the perforations of the stem and split longitudinally to form two sides, and a resilient head consisting of a loop and connecting the sides to form a handle at one end of the supporting and locking device. Tbe device is provided at opposite sides of its center with lower terminal recesses receiving opposite portions of the washer and forming an intermediate depending projecting portion extending into tbe opening of the washer and providing shoulders for engaging the walls of said opening, whereby tbe locking device is held against longitudinal movement and is retained in a perforation of the stem.

Dennis F. Williams, Jackson, Tenn. and William O. Herndon, Bells, Tenn. Two patents.—The object of the invention of the first patent is to provide a single horse land roller for use with growing crops to crush clods, pack soil for retaining moisture therein and for leveling the surface of the ground. Tbe land roller comprises in its construction a frame, a roller mounted tberein, a draft beam pivotally connected with the frame. and adjustable handles pivoted to tbe frame connected with the draft beam. Tbe draft on tbe beam causes the latter to aline itself with the direction of travel of the draft animals, and as the handles are locked to the frame, the roller is caused to assume an angular position with relation to the line of draft. By tbis adjustment, tbe roller may be caused to climb a ridge and to approach plants at either side of a furrow while a horse is traveling in the middle of the same. The operator is enabled to change the direction of the movement of the roller without changing the direction of travel of the draft animal.

The second patent covers a collapsible poultry coop adapted to be folded in a compact condition for returning it to the shipper. It consists of a bottom provided at its ends with transverse cleats, sides pivoted to the inner faces of the cleats and foldable inwardly between the same, ends pivotally mounted upon the cleats and composed of pivotally connected upper and lower sections foldable inwardly upon the sides, and a top pivoted to the upper sections of the ends of the coop.

John E. Kjilberg, inventor, Mobile, Ala.; Cbarles G. Ollinger, assignee, same place. Sea-Wall or Wharf Construction.—Tbe invention relates to wharves, bulk-heads, retaining walls and the like, for use along bodies of water to retain the shore material or embankment from the latter. The principal object of the invention is to provide a structure which is designed to be of a permanent character so as to take the place of tbe common timber constructions wbich are liable to become destroyed by storms or eaten away by sea-worms. To this end a novel arrangement of reinforcing and supporting piles is employed in combination with a wall of concrete or similar material so arranged as to effectively withstand the strains to which the structure is subjected and to be unaffected by the elements. The invention consists of a wall of concrete made of the proper height and thickness, and means for supporting the wall consisting of a plurality of pairs of piles arranged side by side with their upper ends embedded in the wall and their lower ends projecting out of the latter and driven into the earth, the piles of each pair crossing each other at a point below their upper ends within the wall, the piles being secured rigidly togetber so as to form a horizontal reinforce for the wall.

Charles T. Hixson and Asa L. Tarrant, Ringwood, Okla. Automobile Wheel Hub.—This invention relates more particularly to a hub of that type employing both pneumatic cushion devices and cushioning springs, the general aim of the invention being to provide a hub by means of which the necessity of employing a pneumatic tire is obviated. The hub comprises an outer section in the form of a housing, a pair of spaced disks arranged concentrically witbin the said section, a pneumatic tube arranged on the periphery of each of tbe disks, a sleeve adapted to be mounted upon the axle of the wheel and on which sleeve tbe disks are mounted for independent rotation, a diametrically arranged centrally disposed abutment fixed on the sleeve between tbe disks, and pairs of oppositely acting straight springs connected with the abutment. By this construction a resilient wheel hub is provided in which advantage is taken of the resiliency of the pneumatic tubes and the springs.

Cbarles A. Sellon, Halleck, Cal. Magnetic Ore Separator.—The invention relates to a sluice box for the magnetic separation of gold, tin, tungsten, and other heavy metals contained in black or magnetic sands. The object of the invention is to provide a novel arrangement of magnetic plates over which pass the sands that contain gold and other metals with the magnetic particles, in combination with longitudinal partitions for effecting the even distribution of tbe sands over tbe plate. Means are also employed for testing tbe values of the sand that is carried by the water from the magnetic plates to determine the operative conditions. The construction is comparatively simple and inexpensive to manufacture, reliable and efficient in use, and is so designed as to effect a material saving in metals. Broadly speaking, the invention consists of a trough and a magnetic plate arranged in the bottom thereof, and consisting of sheet metal of double thickness with a non-magnetic filling, and magnets arranged on the plate.

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FOR SALE outright—U.S. Patent No. 1.007,459. Sod Cutter. For pulverizing green sod either before or after plowing. For particulars and drawings, address Julius Larsen, Box 411, Deer Lodge, Mont. sep

FOR SALE — Patent Leaf-turner, issued last April. Device applicable to large or small books, loose-leaf or bound. Easily attached to pianos, organs or music racks, without damage to instrument, or books. Address, Ernest Meier, Hye, Texas. sep

FOR SALE — Electric Animal Exterminator. Kills rats, mice, etc. Drops body out of sight. Economizes current. No fire; no accidents to persons, dogs, cats, etc. Always ready, reliable. manufactured cheaply. Connect ordinary circuit. Patent No. 1,024,060, April 23, 1912. Canadian patent pending. Address, O. N. Calvert. Kahoka, Missouri. sep

FOR SALE—Patent No. 1,023.679, dated April 1912. Bench Dog or Stop. Quite simple and inexpensive. Can be sold more cheaply than anything heretofore offered to the public in this line. Every hardware store and bazar will take a supply. The best bench stop ever put on the market. Will sell outright for reasonable price. Address' J. Primos, Box 218, Hammond, La. dec

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FOR SALE—U. S. Patent No. 1,020,052. Fly Trap. Outright, state right or on royalty. If interested address Hans Passig, R. R. No. 2, Box 39, Lake Benton, Minn. aug

FOR SALE—Patent No. 919,976. Sharpening device for knives, scissors, etc. A good mail order or agent's proposition. I will accept $3,000 cash, or exchange for land. Address, A. J. Sturm, Stratford, Wis. aug

FOR SALE—Apparatus for constructing concrete walls and piers. Rods and set screws used for holding forms. Fifty per cent lumber saved. Specifications furnisheed. Write for particulars. Samuel L. Shaffer, R. F. D. No. 1, Hatfield, Pa. aug

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FOR SALE or royalty basis—Patent No. 1,024,287. Multiplane Airship. Will land and rise from the water. Carries twelve passengers. Can't fall. Improved safety devices. Address. E. H. Sassil, 37 Chandler Ave., Detroit, Mich. aug

FOR SALE—U. S. Patent No. 1,018,682. Simple self-locking burglar proof car seal. There is no seal on the market that is burglar proof. My seal is wanted by railroads. Have orders. Address, A. C. Rosenbrook, Wall, S. Dakota. aug

FOR SALE—U. S. Patent No. 1,014,668. Internal combustion engine, also Canadian, French, British, German, Italian patents. One or all. Reasonable offers considered. Address, Samuel Pearson, Box 116, Kerrville, Kerr Co., Texas. aug

FOR SALE—Patent No. 1,014.504, dated Jan. 9, 1912. A pair of pipe-clamps, now in use. A success guaranteed. Address, S. G. Miller, Russell, Kansas. jy

FOR SALE — Patent No. 1,014,561, dated Jan. 9, 1912. Torpedo Placing Machine. Can't miss placing torpedo while train runs at any speed. Address, J. D. Bell, Box 122, Arcadia, Kansas. jy

FOR SALE—Patent No. 1.020,038, dated March 12, 1912. Razor sterilizer for barbers' use. A simple and inexpensive device for the purpose. Address, Martin Goldstein, Keystone, W. Va. jy

FOR SALE outright — Patent No. 1,020,791, dated March 19, 1912. Improved Coat and Hat Rack. Twisted wire. Five hooks in one piece. Will sell for cash to highest bidder. Address, Lucy E. Baldwin, Bridgmen, Mich. jy

FOR SALE — U. S. Patent No. 1,003,466, dated Sept. 19, 1911. Animal Trap. This trap kills them instantly and can be baited with live bait. All offers considered. Address, E. H. Kettelforder, 512 South 13th St., Richmond, Ind. jy

FOR SALE — Patent No. 1,020,487. Milk can and bottle top for keeping the milk fresh and sweet. Will sell outright. Address, Thomas Febert, R.F.D., No. 35 Shirley Road, Lancaster, Mass. jy

FOR SALE—Patent No. 1,019.153, dated March 5, 1912. Road Scraper and Grader. Has been tried and found to be one of the best tools ever put on the road. Address, S. E. Hughes, Alexandria, Indiana. jy

FOR SALE—Patent No. 1,020.332. The most improved and up-to-date Miner's Candle Stick. Address, Antonio Viera, Ray, Arizona. jy

FOR SALE — Patent Gas Mixer for Gasolene Engines. Located between carbureter and intake pipe. Simple to manufacture. Saves from one-quarter to one-third gasolene in addition to increased power. For particulars write August J. Fritz, Box 24, Farmington, New Mexico. jy

FOR SALE—Owner of letters patent on new invention in perambulators, which carry two children with as much ease as one formerly, will sell the patent rights outright or on royalty. For particulars apply to William T. Fields, No. 210 N. Delaware Ave., Atlantic City, New Jersey. jy

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FOR SALE — Patent 1,018,787. Railway Tie. Very simple and effective. Address, Walter J. Steventon, Box 25, Nesquehoning, Pa. jy

FOR SALE—U. S. Patent No. 1,017,456, issued Feb. 13, 1912. Improvements in tires for automobile wheels. A yieldable tire that is puncture-proof, non-skidding and strong and durable. Will sell patent outright or on royalty. For particulars address, William Pavlik, Box 132, Bayport, N. Y. jy

FOR SALE—Patent No. 1,006,507, dated Oct. 24, 1911. Expansion Joint. Expands freely under high pressure with unlimited traverse. Been in practical use since September 1910. Address, C. R. Speight, Burgaw, N. C. mar-13

WANTED.

WANTED — Someone to manufacture and market my Fence Wire Fastener. Patent No. 1.020.259, a combination with a fence post of plastic material such as cement post, on royalty or per cent. Address, M. J. Burkhart Missouri Valley, Iowa. sep

WANTED—To correspond with rule manufacturers with regard to manufacturing "The Best True Bias Gage" (recently patented.) This square and rule combined is for the use of dry goods or carpet firms, dressmakers, milliners, tailors, etc. Address, N. A. Morse, No. 916 W. Third St., Abilene, Kansas. aug

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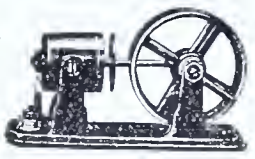
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WASHINGTON, D. C., JULY 1, 1912.

THE PROPOSED PATENT COMMISSION.

In another column we have printed in full the special message sent to Congress by the President, in which he urges the appointment of a commission of qualified persons to report upon such revision of the patent laws as may be necessary to harmonize them with the best thought and needs of our time.

This is not the first time that a commission has been proposed or appointed for this purpose. A similar commission was appointed by President McKinley under an Act of Congress approved June 4, 1898. The commissioners at that time were Peter S. Crosscup, Francis Forbes and Arthur P. Greeley, the first-named being until recently a judge of the Circuit Court of Appeals of the Seventh Circuit, and Messrs. Forbes and Greeley being well known patent lawyers. They submitted their report to Congress under date of November 27, 1900.

The Act authorizing the commission required the commissioners to revise the statutes relating to "patents, trade and other marks, and trade and commercial names." Hence the report to Congress covered both patents and trademarks.

Following the submission of the report, bills were submitted in Congress revising the laws relating to the issuance of patents and the registration of trademarks. The Federal Trademark Act of Feb. 20, 1905, was the outgrowth of the report of the commission. The commission made numerous recommendations of changes in the patent laws, among which were the following:—

First. The application for a patent filed within seven months of the filing of an application for the same invention in any foreign country, which is a party to the International Convention, should be given the same force as regards the question of priority that it would have if filed on the date on which the foreign application was filed.

Second. Subjects or citizens of countries, which are parties to the International Convention, should be permitted to file caveats, if the law providing for the filing of caveats is to remain in force.

Third. Executors or administrators authorized under the law of the domicile of the deceased inventor to administer upon his estate, should be permitted to make application and receive the patent for such invention.

Fourth. Applicants located in foreign countries should be permitted to make the affidavit required by law before any judge or magistrate authorized to administer oaths of the country in which they may be.

Fifth. Non-resident applicants for patent should be required to place themselves within the jurisdiction of the courts of this country.

Sixth. A disclosure of an invention in a foreign patent shall have the same effect as a bar to the grant of a patent in this country, that is given to any other disclosure, that is, if printed, the patent shall have the effect of a printed publication: if not printed, the patent shall have no other effect than that of knowledge or use of the invention in a foreign country.

Seventh. An application for a foreign patent shall not be a bar to the grant of a patent to the applicant in this country.

Eighth. A patent granted on an invention previously patented in this country to another, shall expire with the expiration of the first patent.

Few of these recommendations were embodied in law, though many of them were important and quite necessary for the perfection of the patent laws of this country. As a result, we find ourselves confronted by the pressing demand, voiced on all sides, for a revision of the patent laws. In deference to this demand, a bill has been prepared by the committee on patents of the House of Representatives, which involves a wholesale revision of the patent laws. So much opposition has however arisen that it is believed a proposition will be made to create a new commission for the purpose of revising the laws along the lines suggested in the message of the President.

There is no reason to doubt that a commission appointed at this time to codify and revise the patent laws will will find more to recommend than the commission appointed under the Act of 1898. If a commission is authorized, it is hoped that in the selection of the commissioners, some true representative of the inventor will be appointed to look after his interests. Attorneys representing great corporations cannot be relied upon to perform this service.

LESSONS FROM THE TITANIC.

Now that the investigations of the Titanic disaster by Congress and by Parliament are over, and the lapse of time has enabled the world to get a perspective of the matter, the question arises, what are the practical lessons that we have learned, that may lead to reforms in future? The necessity of ships adopting a more southerly route, especially in the spring when ice floes are traveling from the Arctic Zone, is obvious; the international regulation of passenger-carrying steamers; the importance of having more life boats, and drilled crews to man them: an extension of the wireless system, and better control of the same, are also clearly indicated. It is the province of the AGE, however, to deal with the mechanical features of the matter, and to summarize the practical safeguards which may be adopted in future. In another column will be found various suggestions and the descriptions of inventions that would tend to minimize the chances of danger. Contrary to a general impression, the large size of a ship does not necessarily mean weakness when in the open sea, unless it be in some great storm. It does not follow, therefore, that the construction of giant hulls will cease. In fact, several ships larger than the Titanic are under way, and there has been no change in the plans on account of the disaster. There may well be, however, as elsewhere pointed out, certain changes in these ships in the form of horizontal and longitudinal-wing bulkheads, in the extension of the transverse bulkheads to the highest deck at each end, in doubling the area of action of rudders so as to make the handling of the vessel easier, etc. The Great Eastern, a ship of fifty years ago, rivalled in size some of our modern leviathans, but she was the safest ship ever constructed. The steel ship of today, in spite of her impression of solidity, is really a curious compound of strength and fragility. She consists of an enormously strong and stiff framework, overlaid with a skin of steel which, in relation to the bulk of the ship, is thin and frail, being not more than an inch or two in thickness. This skin is strong enough to resist the stresses set up by the action of the waves and the thrust of the propellers, but let the enormous energy of the moving weight of the ship be developed by contact with some outside object, and the skin will be punctured like so much tissue paper. In the construction of the Great Eastern, the engineer, I. K. Brunel, built a hull within a hull, the two being three feet apart. He further subdivided the whole interior by building across the ship, from side to side, ten transverse bulkheads, which reached from the bottom clear to the top deck. He also ran longitudinal bulkheads throughout the full length of the engine and boiler room spaces, and in the boiler rooms he built three additional bulkheads. Altogether the interior of the Great Eastern was subdivided into no fewer than fifty-one separate compartments. The space between the inner and outer skins, moreover, was subdivided by plate iron webs running the entire length of the ship, and these spaces were further reduced by transverse webs, so that the whole double shell was a honeycomb of watertight pockets.

In the Titanic, on the other hand, there were only 16 interior compartments, and there were none longitudinally of the ship. A puncture of the single skin therefore admitted water to the full width of the vessel. The bulkheads also extended only 15 feet above the water, and when the latter began to flow in, it soon overflowed the tops of these partitions. It will be argued that the Great Eastern was a financial failure; but this was not due to her safe construction, but to the fact that at that period in the traffic of the world, it was not possible to secure the full cargoes or passenger lists that were needed to make so huge a vessel profitable,

Another lesson we have learned is that the proper place for the bunkers is against the sides of the ship. Not only does the closely packed coal choke the inflow of water, but the inner wall of the bunkers acts as an inner skin. This is the arrangement in the cruisers of the Navy, where the bunkers serve as a protection against projectiles above the water and torpedoes below. The Mauretania and Lusitania and some of the German boats are built in this way, to meet the requirements of the Navy and it is a safe prediction that if one of these vessels had met with the iceberg which sank the Titanic, she would have remained afloat. It will be remembered that the Great Eastern at one time struck a submerged rock near Montauk Point, and tore a hole 80 feet long and ten feet wide in her outer skin, and yet, in spite of that terrible injury, came safely into port. Steamship owners will doubtless object to the extra cost of this construction, but they can lessen the number of palm rooms and golf courses and similar luxuries provided for their passengers, and they can also raise the rates. People will probably be willing to pay a premium for safety.

The creation of a new officer is another feasible suggestion, this one to be called the commandant, to have charge of the crew and passengers in case of accident. He is to drill the crew in port, and be responsible for the easy working of all safety devices. In recent years the passenger carrying steamers have grown so large and complex in their arrangements, that it is humanly impossible for the captain, or any other one man, to be responsible for everything. The commandant is to make out lists and post them in the various staterooms, explaining to the passengers just what they must do and where they must go in case of accident. He is to examine the condition of the watertight doors, look over the fire hose, test the pumps, and like the "fire boss" in a coal mine, have everything ready for emergencies.

Lifeboats, although the number carried by a ship may be largely increased, must always be regarded as crude and insufficient means for pre-

serving the people on board. Twenty years ago, it was essential that such a boat should not only keep afloat, but should be able to make progress to port. Thanks to the wireless, that is all changed now. Two sets of wireless instruments should be kept on board of every ship, so that they can be tuned for different distances, and two operators should be employed on even the small vessels, so that one can be always on duty. If the wireless operator on board a ship that proved to be only a few miles from the Titanic had not gone to bed, it is likely that most of the passengers would have been saved. Laws will probably be enacted at once, establishing a sort of international control over the use of wireless on sea going vessels. The conflict of Interests between the opposing companies, which caused delay at the time of the accident, is one of the evils that will receive prompt attention. It is understood that a consolidation of the companies, which will do away with the rivalry previously existing, is under way. The regulation of private shore stations, so as to avoid the confusion that exists in the transmission of messages between ships and the shore, is also urgently recommended.

A New Shoe.

An invention that will be a boon to every individual wearer of boots and shoes, has been perfected by an Englishman after years of toil and expenditure. It is a scientific process for treating the leather, by means of which it is made absolutely waterproof and impervious to cold and heat, and its wearing qualities greatly increased. It is also claimed that the heels can be removed and readjusted in a few seconds, and are interchangeable, so that if reversed every few weeks, they can never wear down on one side. Every one knows the discomfort and ugliness of an uneven heel, which makes the shoe look shabby before its time. Surgeons say that worn heels are the most frequent and least suspected cause of corns. A new sole can be applied without pegging or hand sewing. It is difficult to realize what this simple invention will mean to trade, when it is generally introduced. As *Chambers' Journal* says, the inventor will put us all on a different footing, and has done his best to prevent us from being down at heel.

Electric Railway Up Mount Blanc.

Passengers are now being conveyed to the top of this giant of the Alps by means of a suspended, electrically driven cableway. The first cableway of this kind is now being successfully operated on the Wetterhorn, a few miles away. The car is hung from a permanent steel cable which is stretched along between towers and trellis work. There is an upgoing and a downcoming car, each upon its own cable, and the two run close together upon the parallel cables, the two main cables being carried upon the upper expanded part of the towers. The cars are drawn along at the same time by a lighter cable, which is endless, and runs upon drums in the upper and lower stations. An electric motor in the upper station serves to operate these drums. Another cable, just under the track, is used for safety, and serves as a standby in case the drawing cable should break. Tourists, instead of toiling up dangerous passes, will now have the sensation of an aerial voyage among the glaciers and snow covered peaks, and will be conveyed in this manner to the high peak called the Aiguille du Midi, near the summit of the mountain.

Aerial Photography.

The coming of aviation seems about to open a new and more satisfactory era in aerial photography, says a recent number of the *Literary Digest*. Photographs have been taken from balloons and even from kites, for years, but merely as curiosities, except in the few cases where they have been utilized in warfare. Besides this, the balloon is rather an untrustworthy platform for a camera. When used on the aeroplane, the vibration affects the roller blind shutter, no matter how great its speed, while the curtain slot passes along the face of the plate. The blue haze between lens and landscape will hopelessly fog the plate, and should the sky operator lean far enough over the hood of his camera to view the image on the ground glass, he will find the instrument a poor substitute for a parachute.

Kodaks are of little service for serious aerial work, as the fine details of the distant landscape are lost on small plates. A new camera has been designed especially to meet these conditions. It consists of a cone-shaped leather covered box. An 8 x 10 plate holder slides under an opaque spring-compressed door at the wide end. The lens is screwed in its flange at the smaller end. It is equipped with a multi-speed shutter with any exposure up to the 2,000th part of a second. The shutter can be instantly set and released with the finger, without changing the position of the camera. A square "look-through" finder enables the operator to instantly "sight" the desired object. The wide-open lens gives good sharp definition of 25 feet, and no rack or focusing screen is required, the camera being of the "fixed focus" type. It is held on the photographer's knees in the airship.

Long Distance Piano Player.

The latest variation of this popular device is one by which a piano may be operated at any desired distance. It is intended for use with pianos located in public rooms, restaurants, etc., where it would be desirable to keep the operator, the music rolls, and other apparatus out of sight. The piano, says *Popular Mechanics*, is fitted with a set of electromagnets, one magnet for each key and pedal. Each of these magnets is connected to the operating device by its own wire, the different wires being bundled together like a telephone cable. The operating mechanism is actuated by an ordinary electric motor working on any commercial type of electric current. The motor drives the rolls that carry the perforated paper, and also a rotary vacuum pump. A closed cylinder with a row of small openings on its upper side is so arranged that the air can be exhausted from it by the air pump. These openings are closed by the unperforated portion of the roll. When a perforation in the paper exposes one of the holes that lead into the vacuum chamber, air rushes in and depresses a spring supported pin so that an electrical contact is made. Each opening and pin is connected electrically with the previously mentioned electromagnet of the corresponding key, and the closing of the current causes this key to be struck. The force with which the notes are struck depends upon the amount of current transmitted to the magnet, and this is regulated by other holes and contact pins in the vacuum chamber. The time of the music is regulated by changing the resistance in the circuit connected to the motor. These resistance coils, both for controlling the time and the strength of tone, are arranged as a sort of rheostat that is normally stationed at the half way point. This allows automatic regulation either way by increasing or decreasing the flow of current. The pedals are controlled similarly. The device may be clearly understood if one remembers that each operation, whether striking a key, depressing a pedal, changing the time or changing the force with which the key is struck, is controlled by its own air and contact pin in the vacuum box.

When the selection is finished, a single hole in the sheet makes a contact that reverses the winding mechanism, rewinds the music and sets everything ready for the execution of the next piece.

A Missing Submarine.

Some years ago a British submarine was sunk by accident near the coast of England, with the loss of eleven lives. The boat was raised and used again, though the tradition of ill luck, which surrounds some vessels with singular persistence and survives changes of names and other externals, clung to her. To the superstitious, this tradition has been justified by a recent occurrence. In order to carry out tests of a new apparatus for raising submarines, the boat in question was taken to the experimental grounds and sunk. The next day, when torpedo boats were sent to raise her, she could not be found. Efforts to locate her have been made for weeks, but in vain. It is believed that the strong currents of the channel have swept her away, and she may now be drifting toward mid-Atlantic. Fortunately, no loss of life attended this last mishap.

Running a Locomotive by Wireless.

What the Railway and Locomotive Engineering Magazine calls the climax of wireless achievement is the operation of a locomotive by wireless. This was actually done as a test on a stretch of the Canadian Pacific Railway. It is claimed for the system that it depends upon no one man or group of men for safety, and it puts it out of the power of the engineer to operate the train if anything be wrong, whether it be an open switch or a derangement of the system itself.

The test was made on a two-mile stretch of double tracked road, the track being divided into blocks, four on each track, separated by insulated joints. A wooden trunking containing the wires is laid midway between the rails the length of each block. At the end of each block is a generator of wireless waves of high frequency. This generator is controlled by the alternating track circuits of the block in advance, and as long as this block is not short-circuited or broken, the wave generator which it controls is sending the high frequency wireless waves along the blocks in the rear. An open switch or broken rail will stop the wave generator which it controls, thus placing the next block at danger, by the absence of the wave.

On the engine, which is equipped with the receiving apparatus, are antennæ. The two main antennæ are located one under the center of the engine and the other under the tender, the first being 16 feet and the latter 12 feet long. They contain each 12 copper wires and are suspended about 8½ inches above the trunking in the center of the track. Counterpoise antennæ are also provided, one under the right-hand steam chest of the engine and the other on the left side between the axle boxes of the tender. Connected to the antennæ are highly insulated wires which run to the apparatus on the running board of the engine, just in front of the cab. These wires are connected with tuning coils, to which is joined the wireless wave responder. This responder, the latest novelty in wireless, operates the master relay, which in turn energizes the solenoids and controlling valves on the whistle line in the cab, the train line valve, the air-brake system and bull's eye flashlights in front of the engineer. The energy for the engine apparatus is supplied by storage batteries which are renewed once in every three weeks.

In making the experiment, a mixed train of thirteen cars started on the line and was moving at 20 miles an hour, the whistle blowing and the red light on. When it passed the pickup wire at the first station, the whistle in cab ceased blowing, the red light went out and a green light appeared. The speed was gradually raised to 46 miles an hour. A motor car was then run into the block, this being the surprise danger test. The green light was extinguished, the red light started, the whistle blew, the train line valve was opened, and the brakes started automatically to apply. During all this time the throttle was wide open, the steam gauge registering 180 pounds, the engineer's air brake valve being in running position. The air brake gauge showed a gradual reduction in the train line of 18 pounds in thirty seconds, and the train was brought to a standstill in 35 rail lengths. Other trials proved equally successful. The inventor is F. W. Prentice, who has devoted fifteen years to the perfection of the system.

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Cocks, valves, switches, and the like, Apparatus for automatically opening and closing....W. Howlin
Coffee machine....C. Nelson et al
Coffin case, Metallic....J. Jones
Column cap and base shaping machine....C. W. Borg
Combing machine, Circular....J. Smith
Concrete piling....E. Bignell
Connecting device, Elastic....J. N. Cutler
Container....F. N. Phillippar et al.
Control system....K. A. Panly
Converters, Blast connection for....R. Bernhard et al.
Convertible chair....R. Moskowits
Conveyer....W. J. Turnbull
Conveyer bucket....R. W. Dull
Cooking apparatus....R. B. Vessey
Cord or cable supporting bracket....J. V. Trenaman
Corn drying device or utensil, Seed....J. S. and B. L. Bain
Corn grader, Seed....C. Hunnicutt
Corn popping machine....J. A. Rotherham
Corn sheller spring mechanism..J. Velder
Corn shellers, &c., Cleaning apparatus for (Reissue)....F. Hall
Corset, Breast supporting....H. F. Leporin
Cotton container, Waste....L. P. Dorais
Cotton waste, Renovating...J. Kauffmann
Cover retainer, Receptacle..P. A. Lawrence
Cow tail holder....S. C. Beardsley
Crumbling device for superphosphate and other materials..N. K. E. Malmsten et al
Cultivator, Beet blocking....A. Clark
Cultivator wheel guard....F. Adix
Current program system, Alternating....J. L. Wrenn
Curtain fixture....C. A. Sterling
Curtain rod and attachment....F. L. Lathrop et al.
Cuspidor lifter....R. Henry
Cutter head gage....G. Watkins etal.
Cutting and punching machine....S. A. Bostwick
Cycle rear seat spring, Motor....F. E. and R. A. Palin
Decorated fabric....F. Rink
Decorated fabric....G. H. Taylor
Die starter....J. J. Young
Diolefins, Producing (3 pats.)....F. Webel
Diolefins, Producing (2 pats.)....F. Webel
Disk record holder....A. S. Nichols
Dispensing can....C. A. Hertenstein et al.
Display apparatus....K. Koike
Display case, Lace curtain..W. A. Charlet
Display device....J. Stranders
Display rack....B. J. Buckingham
Display rack....J. R. Mahoney
Display rack, Hat nesting..R. Parker, Jr.
Door closing apparatus....W. Duggan, Jr.
Door opener....B. F. Souther
Door operating mechanism....A. D. Lake
Double cylinder engine....A. G. Bethard
Draft equalizer....F. E. Spencer
Draft rigging, Friction....J. F. O'Connor
Drill-bit....J. Sohacki et al.
Drill spindles, Feeding attachment for....R. Milne
Dumb-bell, Grip....J. C. Korth
Dye, Azo....M. Kahn et al.
Dye, Brown azo....M. Kahn et al.
Dye, Manufacture of pyrazolone-azo....K. Elbel
Dye of the triphenylmethane series....A. Hausedorfer et al.
Dyes and making same, Anthracene....M. H. Isler
Dye and making same, Halogenated vat....O. Bailly
Dyeing and the product thereof....G. Engi et al.
Eaves trough....A. N. Faupel
Egg beating, cream whipping, &c., implement....E. H. Johnson
Egg saving packer....J. J. Miller
Egg tray....C. D. Barr
Electric alarm....W. J. Knobloch
Electric fixtures or electroliers, Shade holder for....L. W. Andersen
Electric heaters and irons, Stand for....R. P. Moodie et al
Electric refining crucible....J. H. Reid
Electric wave transmission....J. H. Cuntz
Electrical connection....J. M. Anderson
Electrode for reversible galvanic batteries (Reissue)....W. Morrison
Electrodes of secondary batteries, Process to regenerate and improve the structure of lead....E. H. Naylor
Electroplating....A. Leuchter
Elevator safety device....L. Gvorffy
Ellipsograph....L. Burke
Embankment....E. P. Stratton
End gate, Wagon....W. E. Hinze
Engine....T. J. Ashby
Engine lubricating system, Explosion....C. H. Taylor et al.
Engine lubricator, Steam....D. Morehouse
Engine starting crank, Hydrocarbon....E. J. Patton
Engine starting device, Explosive....W. C. Hartmann
Engine starting device, Explosive....E. V. Swern
Engine stop....J. L. Kimball
Engineer's slope rod....C. R. Hauke
Explosive engine....R. McKee
Eyeglasses....C. Loveone
Eyeglasses....W. W. Essick
Eyelet stay joining machine (Reissue)....F. L. Anderson
Fan, Oscillating motor driven..C. C. Waite
Fastener inserting machine...S. A. Dobyne
Fatty materials, Hydrogenating....C. Ellis
Feather cleaning apparatus, Pneumatic....C. V. Dey
Feeder for steam boilers or generators (2 pats.)....C. C. Worthington
Filament, Conductive....H. Lyon
Filament, Incandescent lamp..C. A. Hansen
Filament, Metal....W. D. Coolidge
Filament, Metal (3 pats.)..W. D. Coolidge
Filament treating apparatus....W. D. Coolidge
File, Paper....J. W. Almond
Filing device....A. T. Elwell
Filtration and supply system, Water....L. E. Smith
Fire escape....J. Stephan
Fire escape, Portable....C. J. Geisel
Firearm with fixed barrel and locked breech, Automatic....A. W. Schwarzlose
Fireproof window....S. H. Pomeroy
Fireproof window construction....E. H. Lunken
Flash light apparatus....J. A. Smith
Float....G. B. Crist
Float for bathers....W. C. Knoph
Flue cleaner....H. C. McKeel et al
Fluid meter....J. W. Ledoux
Fluid pressure control....
Fly trap....
Flying machine....
Flying machine (Reissue)....
Flying machine stabling....
Foliage, Machine for....
Food from grain and making....
Food mixer....
Footwear....
Forks and spoons, Making....
Form for shaping and finishing....
Fruit handling machine....W. H. Reed
Furniture panels, Making....H. Hazen
Furring plate, Metallic....W. L. Caldwell
Game apparatus....C. Watts
Garden tool....F. W. Ulrich
Garment supporter..L. N. and F. O. Cates
Gas and coke, Retort oven for producing....H. Koppers
Gas burner....A. F. Thomas
Gas cut off....C. P. Lo
Gas engine, Compound..G. W. Jessup, Jr.
Gas fixture....J. W. L
Gas generator, Acetylene....J. T. and T. C. Hays
Gas heater....L. F. Be
Gas mixer....R. J. Wa
Gases from the air, Extracting rare....G. Claude
Gases, Treating....P. G. Schmidt
Gate structure....J. J. Hines
Gearing....R. Lory
Gearing....J. Stenz
Gearing, Elastic variable....A. M. Allen
Gearing, Reduction....J. H. Macupine
Gearing, Transmission....G. W. Bulley
Gearing, Transmission....G. W. Marston
Gin saw cleaner....J. C. Shropshire
Golf club....C. H. Seely
Governor, Alarm....G. Long
Grab for material in large pieces, Automatic....W. Ellingen
Grading machine....R. A. Baker
Grain drill (2 pats.)....D. A. Schutt
Graphophone reproducer....V. H. Emerson
Gate....D. Dee
Grate and stove heater attachment....T. C. Walker
Grinding and like machine....A. A. Scott
Grinding balls....A. E. Greene
Grinding machine....W. F. Cremean
Grinding machine, Ball....A. E. Greene
Grinding machine, Hele..G. K. Garvin et al.
Grinding mill crusher head...H. A. Hunt
Grooving tool....A. F. Strafer
Gummed strip applier....J. C. Kennedy et al.
Guns, Safety breech block lock for....S. Jacobs
Guns with differential recoils, Firing device for....E. Muller
Hair pin....L. C. Belz
Hame draft eye....T. A. Fog
Hammer, Steam....T. M. Sheearer
Hammock....J. J. Maxwell
Handkerchief machine....M. Adair et al.
Harrow and drag combineed..T. J. Wheeler
Harrow, Lever....A. B. Hays
Harrow, Section....G. C. Shankle
Headed blank feeding machine....E. W. Duston
Heading mechanism....E. W. Duston
Heating device....F. H. Wheelock
Heating system, Hot water....H. Aherns
Hoe and potato digger, Combined....C. E. Shafer
Hoisting apparatus....C. O. Pearson
Horn or alarm, Diaphragm....S. Rosofsky
Horses, Device for stopping runaway....T. Watanabe
Horseshoe calk....W. J. and J. Miller
Horticultural forcing house....A. Frieling
Hose....F. R. Neff
Humidor....H. W. Donghty
Husking device....J. S. Hofer et al.
Hydraulic motor....J. F. Prosser
Hydroaeroplane....E. P. Ekman
Ice cream dispenser....C. Doering, Jr.
Ice cream freezer....L. E. Hudson
Ignition system, Combined....R. H. Cunningham
Ignition system, Dual....C. Cuno
Incandescent light, Increasing the intensity of....R. P.Picter
Index, Adjustable....J. H. Rand
Injector....E. Koerting
Insecticide....W. Newell
Insole, Reinforced....G. L. Rollins
Insulated platform....G. L. Brooks
Internal combustion engine...J. F. Hopper
Internal combustion engine....D. H. Coles
Jewelry safety clasp....M. A. Gerson
Key ring....W. C. Ford
Knitting machine....H. A. Houseman
Knitting machine....E. A. Hirner
Knitting machine yarn feed device....A. M. Pigeon
Knitting machine yarn feeding device....A. M. Pigeon
Knob....H. G. Collins
Knob, Cover....J. F. Foster
Knob shanks to spindles, Means for securing....T. E. Crouch
Labeling attachment for carton crimping machines....G. W. Beadle
Ladder, Combined step and extension....E. N. Botsford
Lamp, Electric arc (2 pats.)....K. von Dreger
Lamp hanger and automatic cut-out, Arc,....A. G. Munson et al.
Lamp, Miner's....N. Blount
Lantern, Protecting..R. Bright, Jr., et al.
Lantern support....J. Burke
Lantern windows and their operating mechanism....W. Bayley
Latch, Door....S Zaesek
Lathes, Piston ring turning attachment for turret....J. C. Potter

Latrine.....W. M. Sullivan
Lead, Obtaining refined.....J. Asbeck
Lens Blanks, Making.....W. I. Seymour
Lenses, Instrument for centering, marking, and testing.....W. M. Richards
Letter box signal attachment.....C. Bailey
Leveler, Cinder.....E. J. Best
Life preserver.....J. W. Master
Life preserver.....J. A. O'Brien
Lifting device.....W. H. Williams
Lighter, Pocket.....B. Dnbinski
Limb, Artificial.....H. J. Morris et al.
Linotype machine ejector blade.....H. Petersen
Loader, Ore.....N. P. Flodin
Lock.....S. H. Shank
Lock.....R. J. Keppel
Lock.....R. W. Hutchison
Lock.....G. B. Kohler
Lock ferrule.....C. Robinson
Lock washer.....C. F. Beers
Locomotive.....A. F. Batchelder
Loom, Haircloth.....G. S. Cox
Loom stop motion.....G. W. C. Chapman
Lubricating device.....I. Larsen
Magneto.....A. Schmidt
Mail box.....E. V. Davis
Manifolding device.....A. Gilbert
Manure carrier.....A. Gilbertson
Marking device for attachment to the ears of animals.....F. Andrews
Massaging the human body, Means for mechanically.....J. A. Ward
Match box.....P. P. Adolph
Measuring device.....J. F. Andres
Mechanical movement.....L. Judelson
Medicine dropper.....J. D. Wise
Metal boxes, Manufacturing.....W. H. Brakenridge
Metal tubes, Manufacturing.....W. J. and J. W. Moon
Metals, Electrodeposition of.....A. Leuchter
Metallurgical furnace.....G. H. Benjamin
Meter circuits, Service..H. D. Currier et al.
Microphone.....H. E. Shreeve
Microtome.....H. N. Ott
Mining machine bar.....G. C. Arndt et al.
Miter box.....P. R. Wallis
Miter box, Adjustable.....O. H. Fisk
Mop holder and wringer, Combined.....W. Dupre
Mower, Lawn.....J. Edmunds
Mowing machine and harvester reel attachment.....I. C. Benson
Nail feeder, Wire.....J. P. Delihanty
Nailing machine.....E. M. Corcoran
Nailing machine, Loose.....S. A. Dobyne
Nailing machine, Loose.....J. B. Flint
Nailing machine, String.....J. B. Flint
Necktie fastener.....W. Hodgkinson
Netting, Interlocked.....T. Yamamoto
Nut and bolt lock.....H. Hedden
Nut lock.....R. E. Woodson
Oil burner.....F. Williams
Oil burner.....G. J. Bolduc
Packaging loose substances, Machine for.....G. A. Lee
Packing case, Collapsible...F. F. Bradshaw
Packing ring.....C. H. Reynolds
Pail, Dinner.....R. J. Woodard
Painted, Device for preparing surfaces to be.....N. B. Gregg
Paper dispensing apparatus.....A. Rydquist
Paper doll.....C. O. Chester
Paper pulp from old paper, Producing.....C. K. Hahnle
Paper roll changing device...E. G. Robeson
Paper slitting machine.....J. A. White
Pen reservoir attachment.....T. Watanabe
Percolator, Syrup.....W. N. Elledge
Photographic shutter.....J. Linder
Phototelegraphy.....T. T. Baker
Piano brace, Metal.....W. C. Schwamb
Piano tuning device..M. L. Severy et al.
Pianos, Controlling device for self-playing.....R. J. Bennett
Picture hook.....J. A. Costuma
Pipe bending tool....H. F. Harmer et al.
Pipe, Connection for sections of hot air.....A. G. Sherer
Pipe coupling.....G. B. Kissinger
Pipe wrench.....W. A. Hyle
Pipe wrench.....W. W. Leonard
Plane.....C. Bodmer
Plane, cutter, Router.....T. B. Sauer
Plant setting and fertilizing machine.....F. and R. Bruhn
Planting device, Seedling..H. J. Tompkins
Platform operated machine.....G. I. Leonard et al.
Plow.....B. F. Frazer
Plow attachment.....G. W. Elliott
Plug, Attachment.....G. C. Knauff
Pneumatic percussive apparatus.....H. C. Behr
Pocket knife, Take down.....C. H. White
Polishing machine.....W. La Hodny
Polishing or dressing machine.....W. D. Couper
Polo club head.....R. D. Hayes
Power transmission mechanism.....L. M. G. Delaunay-Belleville
Press tympan, Hand proof.....P. J. Shniedeewend, Jr.
Presses, Perforating means for cylinder.....W. Lowy et al.
Pressure retaining device.....G. O. Hammond et al.
Pressure tank connection.....L. Wolf
Printing device (12 pats.)...J. S. Duncan
Printing press attachment.....E. G. Robb
Pulley device, Governor.....C. P. Strite
Pulp agitator.....W. Hammond
Pump, Centrifugal.....E. A. Marsh
Pumps, Operating internal combustion.....H. M. and T. M. Chance
Pumps, Operating reciprocating.....H. M. and T. M. Chance
Pumping liquids..H. M. and T. M. Chance
Rail joint.....C. P. Goetzinger
Rail joint.....C. A. Tieche
Rail joint.....B. G. Braine
Rail support and rail.....W. Burch
Rail tie fastener.....A. Stilke
Rails to metal ties, Means for securing.....W. H. Morgan
Railway block signaling system..Y. Burgess
Railway rails to metal ties, Clamp for securing.....W. H. Morgan et al.
Railway switch joint.....W. Kaylor
Railway switch, Street.....A. C. M. Deurloo et al.
Railway tie and fastener.....J. T. Clark
Railway tie and means for securing rails to the same.....W. H. Morgan
Railway tie, Metal...W. H. Morgan et al.
Railway tie shim.....W. W. Willard
Railway track beds, Device for burning weeds on.....E. Engerbritson et al.
Rat trap.....R. Nye
Razor and blade stropper.....E. W. Cole
Receptacle filing apparatus, Liquid.....P. M. Blackman et al.
Refractory conductor.....W. D. Coolidge
Refractory conductors, Binder for the manufacture of.....W. D. Coolidge
Refractory conductors, Manufacture of.....W. D. Coolidge
Register.....F. K. Boomhower et al.
Resilient wheel.....A. F. Glaser et al.
Resistance unit.....L. E. Barringer
Retarding device.....O. V. Greene
Riddling apparatus for separating straw, cavings, chaff, &c., from grain or seeds.....H. S. Rainforth
Rifle, Repeating air.....A. V. Dickey
Ringing key, Indicating...W. E. Harkness
Root cutter, Weed.....C. M. Deeks
Rope clamp.....J. W. Isberg
Rope, Twisting device for making.....O. C. H. Jeschke
Rotary engine.....J. Gougeon
Rotary engine.....F. P. Hummel
Rotary engine.....A. Stone
Rotary motor.....A. Petersou
Rule joint, Zigzag.....H. P. Richards
Safe.....H. Mintz
Safe, Burglar proof.....P. N. Johnson
Safe, Marine.....P. N. Johnson
Safe or steel vault wall....F. W. Schilling
Sash, Balance window.....H. Knox
Sash lock.....A. E. Blake
Sash lock or fastener.....A. C. Rodatt
Scale, Computing.....A. F. Johnson
Score card.....E. L. De Forest
Scrubbing appliance, Pneumatic.....A. E. Moorehead
Sealing apparatus Hermetic.....J. Merritt
Sealing ring for jar closures.....G. H. Womelsdorf
Sealing the ends of metallic tubes, Machine for.....G. G. Raubaud
Seat for pianos, sewing machines, &c.....J. G. Bauer et al.
Sectional case, Knockdown..O. B. Rowlette
Seed grader.....A. T. Martin
Seeder, Broadcast.....S. B. Hart
Separating devices, Electrically charging electrostatic.....F. O. Schnelle
Sewed articles, Seam for..V. J. Van Horn
Sewing machine table....T. Kundtz et al.
Sewing machine threading means.....M. E. B. Williams
Sewing machines, Guiding mechanism for.....J. L. Kimball
Sharpening machine, Tool....H. P. Caswell
Shingle, Metallic.....H. Clawson
Shingling tool, Adjustable and collapsible.....J. G. Lewis
Shoe buttonhole marker.....E. T. Adams
Shuttles, Tension device for..D. Blanchard
Sign, Advertising display.....C. F. Spery
Signaling system, Selective electrical.....C. L. Goodrum
Silk, Degumming.....E. Schnurrenberger
Silo.....A. Keirle
Sink draining attachment....M. A. Weaver
Sled, Bob.....B. W. Whitney
Sleigh.....M. Diener et al.
Slicing machine, Foodstuff.....F. Clerc
Snap hook.....V. F. Nelson
Soap cake.....W. Haddow
Soap dispensing machine.....W. Haddow
Sounding disk.....C. C. Ehrman
Spark arrester.....O. S. Bennett
Spark arrester.....S. and J. B. Piche
Spoke socket.....P. S. Duffy
Spooler.....A. E. Rhoades
Spreader, Material.....T. Ion
Spring wheel.....F. H. John
Sprinkler alarm apparatus..J. R. Hamilton
Sprinklers, Fusable link for automatic.....A. C. Hannibal
Staple.....J. G. Reber
Steam engine of the Corliss type.....F. P. Ide
Steamer.....S. B. Goff
Steering mechanism, Adjustable.....P. Hansmann
Steering wheel.....J. L. Prather
Steps, Folding.....M. Jefferson
Stitching handkerchiefs or the like, Machine for.....M. Adair
Stitching machines, Cutting mechanism for wire.....H. H. Latham et al.
Stock supports, Mechanism for actuating.....G. A. Ambler
Stop mechanism.....O. Ashton
Street cleaning machine.....M. B. Huson
Submarine rescuing apparatus....S. Roth
Surgical bandages, Machine for making.....O. C. Schultz
Swing.....P. H. Regan
Swing and the like, Porch.....A. H. Klesa
Switch or junction box....O. C. Hoffman
Switch throwing and locking mechanism.....G. F. Weiss
Switch throwing device..Z. L. Pierce et al.
Syringe, Electric water heating.....H. M. Crawford
Syringe, Electrically heated.....M. H. Shoenberg
Talking machine.....W. H. Pumphrey
Telegraphy, Mast for wireless....O. Fricke
Telephone bracket.....E. P. Guthrie
Telephone exchange systems, Revertive-call indicating means for.....A. M. Bullard
Telephone mouthpiece, Antiseptic.....F. C. Tabler
Telephone mouthpiece, Sanitary.....C. V. Fuller
Telephone system.....F. R. Parker
Telephonic or audiphonic systems, Transmitting for.....H. G. Pape
Textile roll.....W. M. Rossiter
Thread cutting apparatus.....S. Frey
Threshing machine feeding mechanism.....T. Hansen
Throw mechanism for antomatic machines, Variable.....T. R. Gulliford
Ticket machine, Amusement..R. M. Rickert
Tie plate.....J. F. O'Connor
Tire.....G. S. Howe
Tire case, Spare.....C. F. Hopewell
Tire, Elastic (Reissue)..G. S. Doty et al.
Tire, Spring.....G. Burson
Tire tool.....A. A. Long
Tire, Vehicle wheel cushion...M. J. Selzer
Tongs.....J. Bittner
Tool box.....W. S. Smith
Tool chest, Portable.....A. S. Hokanson
Tool, Combination.....F. E. Foor
Tool, Electrically heated..L. F. Parkhurst
Tooth and crown, Artificial.....J. Kohn
Top, Spinning.....A. P. O'Brien
Toy.....F. W. Flegal
Toy vehicle.....J. L. Yoakum
Traction engine (3 pats.).....B. Holt
Train order delivering device....W. T. See
Transmission mechanism.....L. E. Schlotterback
Trap.....J. Tippett
Trimming machine.....H. Evans
Trolley tracks, Switch for I-beam.....H. E. Ballard
Trowel.....J. Parkhill
Truck locking device, Engine....G. E. Reid
Tubes, Apparatus for manufacturing metal.....W. J. and J. W. Moon
Tubes, Machine for applying clips to collapsible.....L. Abrahams
Tubes, tiles, and the like, Device for lifting.....F. L. Watson
Tungsten purificatiou.....W. D. Coolidge
Tunneling machine.....A. F. Walther
Tunneling machine.....R. T. Stone
Turpentine gathering apparatus.....W. E. Kenner
Twine cutter.....W. Moore
Type casting machine.....J. S. Thompson
Type setting device.....H. Drewell
Typewriter.....Z. G. Sholes et al.
Type writer, Book.....F. Wissner
Typewriter centering mechanism..M. Pfau
Typewriting machine.....F. C. Miller
Typewriting machine.....H. H. Steele
Typewriting machine.....J. Felbel
Typewriting machine.....F. W. Hillard
Umbrella, Folding.....M. F. Marean
Undulator.....J. A. Ward
Vacuum cleaner.....W. T. Smith
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Vacuum conduit systems, Arrangement for inclosing.....C. W. Nichols
Vacuum supporting device....R. Hazelrigg
Valve.....G. A. Baughan
Valve and mechanism therefor, Automatically operable pressure regulating.....C. E. Hasty
Valve, Automatic.....B. S. Aikman
Valve for carbureters, Auxiliary air.....A. C. Stewart
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Valve for water carts, Controlling.....W. Schorn
Valve lift spacer.....C. W. Smith
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Valve, Pressure retaining..G. O. Hammond
Valve, Standing.....A. J. Henderson
Vapor generator.....R. A. Horst et al.
Vehicle driving gear.....J. R. Tibbles
Vehicle, Spring.....R. Liebau
Vehicle spring.....A. Collette
Vehicle steering head.....G. F. Garrity
Vehicle steering mechanism....E. W. Bliss
Vehicle step.....S. W. Mather
Vehicle top.....A. Ritchie
Vehicle wheel (2 pats.)...A. R. Wylie et al.
Vehicle wheel.....H. J. Sewell
Vehicle wheel and axle.....J. E. Murray
Vending machine.....A. R. Hussey
Vending machine, Bottle....W. H. Herman
Ventilator.....G. R. Siefken
Vise and pipe wrench, Combination.....D. G. Hewitt
Voltage transformation.....M. R. Hanna
Vulcanizer, Portable steam.....E. A. Stier et al.
Wagon, Refuse.....L. F. Scholz
Waist foundation.....S. L. Brundidge
Wall board drier.....H. S. Heichert
Warper.....H. W. Owen et al.
Washing machine.....C. Willes
Watch-bow.....S. Steinberg
Watchcase receiver.....W. O. Beck
Water gage.....J. Hackett
Water heater.....N. G. Goreau
Water heating device, Electric..H. Lofquist
Water tube boiler.....L. Steinmuller
Water wheel, Turbine.....J. Hay
Wave motor.....J. W. Neal
Weevils, Destroying cotton boll..N. Newell
Well boring and casing machine..S. Jackson
Well drilling machine.....F. A. Heberling
Well points, Tool for extracting.....B. G. Horling
Welt preparing machine.....A. Eppler
Wheels from shafts, Device for stripping.....L. F. Allen
Wheels, Manufacture of..R. T. Smith, Jr.
Whiffletree.....T. Martin
Wind shield.....F. Schimper
Wind shield holder.....F. P. Pfleghar
Windmill coupling.....L. C. Hamel
Winding machine.....W. Marlow
Window, Casement.....B. Hausmaun
Window screen.....W. H. Etter
Wire drawing machine.....J. F. Peuder
Wrapping machine.....M. J. Power
Wrench.....C. E. Straub
Wrench.....G. C. Pangratz
X-ray finder.....A. Granger

Issued May 21, 1912.

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Aeroplane.....T. R., R. F., and J. E. Keppel, Jr.
Agricultural implement.....G. T. Bouuds
Air coupling, Automatic.....J. Brant
Air ejector, Hydraulic.....E. E. Cleveland
Air tempering device.....F. P. Mies
Airship.....J. T. Long
Alarm apparatus, High and low water.....A. R. Walls
Alarm for boxes and other receptacles.....S. Mnndler
Albuminoid compound, Indurated.....B. B. Goldsmith
Amalgamator.....C. C. Ellis
Angle plate, Universal.....F. E. Seddon
Annunciator or indicator..W. S. Woodruff
Asbestos from the rock, Machine for separating.....J. E. Werner
Assembling machine.....O. Ashton
Atomizer for liquid fuel motors..J. Leflaive
Automobile fender.....J. Hadka
Bag frame.....C. Hiering et al.
Baler.....B. T. Brown
Bailing press.....J. A. Sharp et al.
Barber's chair.....J. H. Wertz et al.
Base plate.....F. S. Parrigin
Basket, Collapsible wire.....L. Poppert
Bat.....H. Matsou
Battery cover, Electric.....H. J. Brewer
Bearing.....H. E. Coffin
Bearing, Connecting rod.....A. T. Sturt
Bearings, Ball cage for ball.....H. Kapper
Bed, Couch.....G. F. Sisbower
Bed, Sofa.....M. Clune
Bed, Spring.....A. Bellefenille
Bending appliance...J. W. Johnson et al.
Beverage.....I. Holldampf
Bill fold.....H. J. Collis
Binder, Loose leaf.....S. H. Stein
Binder or loose sheet holder, Temporary.....G. P. Wigginton et al.
Binding clip.....N. Siff
Blackboard.....E. L. Kraus
Blade mounting.....W. A. Bole
Blade tie.....C. E. Sweet
Block signal system.....L. A. Hawkins
Boiler.....F. Guay
Boiler fuel and water regulator, Steam.....R. Miehle
Boot and shoe finishing machine.....W. Jackson et al.
Bottle box, Metal bound.....E. E. Flora
Bottle cap or seal.....C. Hammer
Bottle capping machine.....T. J. Levey
Bottle carrier.....J. W. Cope
Bottle carrying and holding case.....L. P. Hazen
Bottle holders and other frames, Metallic weave construction for...J. F. Schoeppl
Bottle, Non-refillable.....G. W. Riley
Bottle, Non-refillable.....J. Cappio
Bottle retainer.....H. E. Hixson
Bottle stopper.....J. S. Porter
Bottle stopper.....W. A. Eckert
Bottle stopper.....W. Fuhr
Bowling alley.....L. D. Haskell
Box handle.....R. J. Gruenberg
Box handle or the like.....J. A. Raymond
Brake.....R. Henley
Brake block holder.....E. A. Peck
Brake shoe (2 pats.).....F. Sargent
Brake shoe.....W. M. Simpson
Brick molding machinery.....W. S. Brice
Briquet machine.....G. Komarek
Brush.....F. Houston
Bucket, Drag.....G. H. Williams
Building construction.....C. O. McGavic
Building structure.....M. F. McCarthy
Bumping post.....A. L. Belt
Bundling machine.....R. C. Lowry et al
Buoy.....R. W. Earle
Burner.....D. Hamilton
Butter cutter.....H. B. Waters
Butter, Making and preserving.....J. M. W. Kitcheu
Cables, Splice between Manila and wire.....G. H. and W. H. Klingler
Caisson.....R. H. Chambers
Can cover loosener.....O. E. Enell
Canoes, Back rest for.....J. E. Benson
Capping machine.....W. L. Wright
Car automatic safety appliance, Railway.....W. L. Poole
Car brake rigging.....I. S. Downing
Car construction.....J. M. Coleman
Car construction, Dump....J. M. Coleman
Car coupling.....M. W. Kirkland
Car coupling uncoupling mechanism.....E. H. Schmidt
Car coupliugs, Bracket for uncoupling rods of.....W. E. Coffin
Car door.....J. W. Rumsey
Car door lock.....T. M. Carthy
Car door lock.....F. Raley
Car door lock, Mine.....J. A. Rivers
Car draw bar carry iron.....B. P. Flory
Car drop door operating mechanism, Dumping.....E. W. Goodwin
Car, Dump.....J. O. Neikirk
Car, Dump.....J. R. Bowling
Car fender.....T. J. Killeen
Car, Ladle.....E. C. Sherman
Car Railway.....B. Sato et al.
Car roof.....W. P. Bettendorf
Car roof construction.....E. Possou
Car signal, Electric.....E. B. Chapman
Car street indicator....P. M. Gulbranstson
Car, Tank.....C. A. Shoemaker
Car valve operating mechanism, Dumping.....J. M. Goodwin
Cars, Removable and interchangeable unit for freight.....H. W. Kirchner
Cars, Valve for bottom dump..M. J. Owens
Carbonating apparatus.....H. M. Smith
Carbureter.....F. P. Johnston
Carbureter for starting internal combustion engines.....F. H. Walker
Casein compound, Indurated.....B. B. Goldsmith

Cash register (2 pats.)....W. H. Muzzy
Cash register....C. Trog
Casket hardware, Burial....M. F. Davoran
Caster, Furniture....A. E. Schatz
Casting apparatus....J. W. Brown, Jr.
Casting metals....F. de Buigne
Cement compounds, Making....W. K. Freeman
Cementing machine....W. A. Neely
Chain....W. D. Tusten
Chain connector, Neck..O. L. Gammelgaard
Chain, Drive....F. L. Morse
Chain, Drive....H. W. Allingham
Chain, Driving....R. H. Richmond
Chair....J. A. W. Sears
Cheese making, Agitator for..A. Christensen
Churn....W. B. Woodruff
Cigar lighter....A. T. Hoevet
Cigar pressing box....R. Woerner
Clock, Program....C. B. Hale
Clothes drying rack....T. G. Amsden
Clothes line support....M. Horovich
Clutch, Friction....W. Dennis
Coal, Manufacturing strongly absorbent....F. Richter et al.
Coaster brake....W. T. Carter
Coating machine....E. G. Palmer
Coffee and the like, Machine for drying..R. Okrassa
Coffee grinder....L. Warstler et al.
Coffee preparation....A. H. Bullard
Coin counting apparatus....B. Lundin
Coin testing appliance..E. A. Buckman et al
Coke oven....T. von Bauer
Collar assembliug apparatus....F. H. Norris
Colorimeter....P. G. Nutting
Coloring matter, Manufacture of azo....H. Bucherer
Coloring matters, Manufacturing black sulfurized....O. Reinhardt et al.
Concentrating table....G. A. Overstrom
Concrete culverts, Collapsible form for....W. Burgner
Concrete lamp post....L. G. Haase
Concrete mixer....C. W. Levalley
Concrete mixing apparatus....C. W. Levalley
Container and cutter, Combined....J. K. Toles
Conveyer....J. W. Dawson
Conveying apparatus....A. S. Dwight
Cooling tower....B. H. Coffey
Corn gathering and husking machine....T. C. Stowell
Corn plaster....J. M. Brandenburg
Corn shock loading apparatus....W. G. Osborn
Cotton chopper....J. C. Cassidy
Counter....W. B. Pearson et al.
Coupling....W. M. Smith
Coupling....C. Mendel
Creel, Metallic....C. A. Alice
Crushing mill....T. J. Sturtevant
Crushiug mill..T. L. and T. J. Sturtevant
Cuff pin....W. W. Williams
Cultivator attachment....C. Lickey
Cupboard and dumb waiter, Combined....C. C. Yetter
Current collecting mechanism....C. J. E. Waxbom
Current motor....C. A. Neyland
Current regulator....W. H. Sherbondy
Currycomb....D. J. Alston
Curtain fixture....W. Bradley
Curtain hanger....J. G. Hearest
Curtain pole....H. A. Anderson
Curtain pole holder....H. T. Holland
Cycle globe, Amusement....H. Richmond et al.
Dam, Portable ditch....A. Cadwallader
Dampening machine..C. J. Prankard, Jr.
Damper, Check....J. Demarest
Delivery mechanism....W. Scott
Derrick connection....W. Bishop
Detonator magazine, Portable....A. S. Hamilton
Die box....C. A. Cuenin
Digging shovel, Trench....J. Lapin
Disinfecting and other purposes, Composition for....L. H. Reuter
Dispensing can....W. F. Pierce
Dispensing device....C. V. and C. J. Case et al.
Display device....O. L. Smith
Display rack....A. H. Riederer
Ditching machine and tile distributer....A. E Hanson
Doll head....J. M. Dickson
Door bolt....B. L. Davidson et al.
Door lock, Emergency....H. G. Voight
Door operating appliance, Automatic....M. Hynek
Door operating device....C. Alter
Door securing device....R. Heinzelman
Door stop and holder....G. W. Rigney
Dough raiser....A. L. Fenton
Draft equalizer....L. R. Cron
Draft regulator for hot water heaters....W. A. Schleit
Draft rigging, Tandem spring..R. E. Frame
Drafting device for shading circles....V. Constantinescu
Draw bar....W. D. Dambino
Dredging machines, Suction tube for hydraulic....L. J. Baltz
Drill....W. R. Down
Drill steel-forming and drill bit sharpening machine, Fluid controlled....J. G. Leyner
Drying apparatus....F. Lafeuille
Dye, Azo....M. Kahn et al.
Dye, Red azo....A. Ossenbeck et al.
Dynamo regulator....W. H. Chapman
Dynamometer for measuring forces....G. Wazau
Earpiece disinfector....L. Block
Electric controller....W. Schwieder
Electric controller crank....G. E. Henry
Electric heater....W. Stanley
Electric hoists, Safety device for....J. H. Hall
Electric lighter for gas burners..S. Brown
Electric line tapping connector....J. F. Richardson
Electric machine, Dynamo....W. W. Dean
Electric machine, Dynamo..J. E. Noeggera
Electric machine, Dynamo....J. E. Noeggerath
Electric machine, Dynamo....L. W. Nelson
Electric machine, regulating apparatus, Dynamo....C. E. Bonine
Electric motor....J. Burke
Electric motor....L. A. Hawkins
Electric switch, Clock operated....F. P. Cauble
Electrical cables or wires, Elevating or separating jack for....T. J. Cope
Electrical contact....E. E. Clement
Electropode, Non consuming arc lamp....E. Weintraub
Electrolytic apparatus....L. G. Fixen
Electromagnetic wave receiver....E. R. Carlson
Elevator....M. E. Bloom
Embroidering machines, Machine for cutting cards for automatic...J. J. Kuecht
Embroidery machine....W. N. Parkes
Engine starter, Internal combustion....C. Van Tubbergan et al
Engines, Apparatus for distributing fuel to internal combustion....H. T. Bruns
Engines, Operating internal combustion....R. M. Fryer
Engravings, Producing color-type....F. D. Montgomery
Envelop....E. G. Shreve
Eraser cleaner, Vacuum....C. W. Polley
Evaporation controlling apparatus....R. S. Blair
Fabric forming device, Tubular....E. D. C. Bayne et al.
Fan for sewing machines..A. W. Ownby
Fan, Punka....J. D. F. Andrews
Faucet....F. A. Dunnebacke et al.
Faucet, Lock....F. M. Ulmer
Faucet, Self closing....J. H. Glauber
Feed bag....P. Szathmary
Feed bag....D. C. Martin
Feed mill....A. Ingraham
Feeder, Poultry....T. Garrison
Feeding mechanism....J. T. Wallace
Fence anchor....W. P. Grannis
Fence clamp, Wire....W. C. Dunn
Fence, Snow....J. I. Iblings
Fender....C. Cefalo et al.
Filaments, Treating....H. I. Wood
Filing cabinet....L. F. Fee
Fillet making machine....A. F. Howe
Filtering apparatus....H. E. Kier
Fire bucket support....M. A. Stewart
Fire extinguisher....J. D. Farr
Fire extinguisher....E. M. Lawrence
Fire extinguisher....E. M. Bishop
Fire extinguisher valve....J. T. Lally
Fire extinguishing and indicating apparatus, Combined....J. W. Lawhon
Fire extinguishing systems, Main valve for dry pipe automatic....F. H. Rice
Fire hose valve, Automatic....P. Mueller
Fire signal device....C. Raymond
Fish fork....E. Mixa
Fishing reel....P. Catucci
Flash light apparatus....W. T. Barnum
Flat screen....S. M. Myrtin
Flower stemming device....L. E. Tygert
Flue working tool....V. Moore
Fluid compressor, Hydraulic....A. F. Hawkins
Fluid shut off....R. Salmon
Fly poison cage....C. M. Klein
Flying machine....J. Kubish
Flying machine....D. V. Cole
Flying machine....M. M. Benster
Flying machine launching means....G. H. Curtiss
Foldable chair....N. Stock et al.
Folding box....J. C. Gordon
Frame....A. L. Weis
Frameless gate....A. Campbell
Fruit and nut squeezer....R. J. Goodnow
Fruit and other grader....E. E. Wagg
Fruit picker....F. Remaly
Fruit picker....A. Murdoch
Funnel....E. Dobartz et al.
Furnace....E. T. Davison
Furnace ignition arch....W. M. Duncan
Furnaces, Water heating attachmeut for..H. Lawrie
Gas furnace....A. K. Lindley
Gas furnace for heating, scaling, and hardening purposes....P. Schmidt
Gas generating furnace....G. Richter
Gas, Making producer....H. F. Smith
Gas or smoke washer....O. M. Foster
Gases in liquids, Apparatus for absorbing...H. L. Whiteley
Gearing....C. T. Darby
Gearing, Change speed....H. M. Cake
Gearing, Reversing....F. D. Bozarth
Gearing, Transmission....G. W. Meredith
Glass cleaning device, Window....E. F. Schorndorfer
Glass tank....C. C. Ross
Glove, Base ball....J. A. Peach
Go cart runner....G. Syverson
Governor....W. T. Strain
Grain binder....G. W. Willis
Grain separators, Sheet metal fish back for..J. D. West
Grass cutter for cutting edges of lawns and the like....H. Irwin
Grass digger, Quack....L. E. Guidinger
Gravity motor....G. S. Welling
Grinding bur....H. G. McCulloch
Gripping device....A. Victor
Gun sight, Rifle and machine....E. Muller
Hame fastener....P. F. McCrone
Hammer attachment....H. B. Hudson
Hammer, Pneumatic (2 pats.)....R. A. Norling
Hardback and the like, Machine for burning....T. E. Doubt
Harness....R. Toward
Harness....J. E. Kershaw
Harrow, Disk....C. W. Michael
Harrow, Reversible....T. T. Hardt
Harvester, Beet (2 pats.)....G. H. Smith
Hat holder....E. H. Mayo
Hat or bonnet protector....A. Beutner
Hat pin....T. M. Daniels
Head shaping machine....C. Glover et al.
Headlight, Automobile..C. Shermund et al.
Headlight curtain....W. L. Russell
Heating....W. I. Thompson et al.
Heating device, Electrical...F. J. Holmes
Heel, Boot and shoe....E. Kempshall
Heel compressing and loading apparatus....C. C. Small
Hinge....H. W. Bertram
Hinge, Friction....J. Bahnsen
Hinge joint for wind shields....P. N. Landine
Hinge, Noiseless pivot....E. E. Kelley
Hoisting apparatus....E. Brown
Hoisting machine....H. T. Johnston
Honing and stropping device....A. K. Hanson
Horse releaser....F. Chandler
Horseshoe....C. Allen
Hose attachment....P. R. Robbins
Hose nozzle and sprayer, Combination....F. J. French
Hot air furnace....W. H. Swett
Hotbed....A. W. Griffith
Housekeeper's reminder....A. F. Rae
Hub-odometer....H. P. C. Browne
Humidifier....F. B. Comins
Ice making apparatus....W. E. Armistead
Ice manufacturing apparatus....W. E. Armistead
Ink bottle stand and holder....L. Asheim
Insulator pin, Sheet metal..B. R. Shover
Interlocking mechanism....F. C. Anderson
Internal combustion engine....S. Lake
Internal combustion engine....N. R. Ricardo
Isoprene, Producing (2 pats.)....G. Merling et al.
Jack....M. Lutenberger
Journal box and oil cellar, Car truck....G. G. Floyd
Key operated lock....F. Bisesi
Kinematographs and talking machines, Film and method of synchronizing the operation of....J. Greenbaum
Kinetoscope....J. A. Le Roy
Knitting machine....J. S. Crane
Knockdown stand or table....H. Judge
Lamp....E. A. Lauer
Lamp....J. H. George
Lamp, Automobile....P. C. Avery
Lamp for miners, Electrical safety....V. V. Patton
Lamp, Pocket....J. J. Mullaney
Lamp, Pocket....H. Schwager
Lamps, Cord adjuster for electric....J. McGavin
Lantern, Tubular....A. R. Fritchard
Lasting mechanism, End...D. L. Wineberg
Lasts, Making molds for shoe..G. Volnagel
Lathe scoring attachment, Veneer....J. Van Mill, Jr.
Lavatory installations, Apparatus for....P. Kammer
Lead....C. A. Gaiser
Level and pitch gage, Combined....C. W. Swick
Lighter....A. H. Nelson
Lineman's climber....J. Donnelly
Liquid fuel burner....H. J. Russell
Liquid treating machiue....J. W. Davies
Lock....I. Ducsay
Locomotive....F. L. Sessions
Locomotive, Electric...F. L. Sessions et al.
Locomotive front end....L. C. Mooney
Locomotive, Back rail (3 pats.)....F. L. Sessions
Locomotive superheater....H. L. Henszey
Looping machine....M. Koehler
Lubricating device....A. J. West
Lubricator....B. F. Howard
Lubricator....J. F. MacIndoe
Lumber jack....C. E. Evans
Magnetic separator....F. C. Heinen
Magneto....E. C. Wilcox
Magneto shaft relative to a motor shaft, Means for advancing or retarding a....A. Levedahl
Map holder....J. G. Patterson
Marker, Siding....J. N. Horton et al.
Match box....R. Dingwell
Measuring device, Fluid....C. A. Hartung
Meat boiler....M. E. Hill
Meat holder....H. Thomas
Mechanical movement....R. A. Norling
Metal articles, Apparatus for tempering....E. H. and J. H. Steedman
Metal container....W. J. Werner
Metal into blocks, Apparatus for compressing scrap....E. Kardos
Metal polish....A. Ridd
Metal working machine....F. C. B. Page
Metals from their ores, Process and apparatus for recovering....J. A. Potter
Mica or other material, Apparatus for distributing and leveling pieces or scales of....C. W. Jefferson
Milk drying apparatus....J. McIntyre
Milk, Treating....J. McIntyre
Mine skip unloading device..C. L. Lawton
Mineral concentrator....C. O. Michaelsen
Mixing liquid and powdered materials, Machine for....S. A. Bigelow
Moistening device, Envelop...J. Hammond
Mold....C. K. Schindhelm
Mold....G. W. Golden
Molds, Making....D. M. Fahnestock
Molding apparatus (2 pats.)....D. M. Fahnestock
Molding machine....E. A. Pridmore
Mop holder....D. Margolins
Motor control system....J. A. Seede
Motor stop device, Gravity..R. E. Springle
Mower....L. O. Ekrem
Mowing machine attachment....A. H. Eckardt
Multiple spindle drill..C. K. Lassiter et al.
Music boxes, Changeable-pin disk for mechanical....H. Graf
Music leaf turner....S. Hansler
Music leaf turner....T. F. Larkins
Music recorder....G. B. Cirigliano
Nail clipper....P. Catucci
Nailing machine....A. S. King
Necktie stretcher....A. R. Silverston
Nitrids, Production of....C. Bosch et al.
Nut lock....A. M. Lance
Nut lock....L. Rice
Oar lock....J. Campbell
Obtunder....J. B. Sapp
Oil burner....M. A. Fesser
Oil burner....V. Matteson
Oil burner, Centrifugal....M. A. Fessler
Oil can....F. Karpisek
Onion or vegetable topping machine....J. H. Shirley
Ordnance, Sighting apparatus for....A. T. Dawson et al.
Ore treating apparatus....H. J. Stehli
Ore treating mechanism....A. S. Dwight
Osteopathic treatment chair....T. J. Berggren
Oxygen generating composition....M. Herschkowitsch
Packing, Metallic rod....A. Gottwald
Paddle wheel, Feathering..F. J. Schneider
Painting, varnishing, filing, or otherwise coating boards or other pieces of material, Machine for....W. W. Nuss
Panel board....R. H. Ogley
Paper, Attaching wall....C. R. Frantz
Paper bag....J. H. Bartlett
Paper board manufacturing machine....P. G. Klotz
Paper cutting and collecting machine....H. D. Black
Paper stock refining and distributing system....L. N. McIntyre
Papering device, Wall....J. G. Work
Paving plant....F. A. Hetherington
Peat bogs, &c., Implements for obtaining samples from....B. Granville
Pen, Self-filling fountain....F. H. Harvey
Pencil sharpener....J. E. Hager et al.
Pencils, &c., Eraser tip for lead....C. W. Roman
Perambulator....D. R. Collier
Perambulator or go-cart....S. Benson
Percolating device....G. E. Savage et al.
Pharmaceutical product (2 pats.)....W. Hiemenz et al.
Photometer....A. Erhardt
Piano agraffe....M. Nystrom
Piano pedal opening guard....H. B. Vanhook
Pianos, Pneumatic action for self-playing..W. A. Kruck
Picture machine, Moving....L. W. Merkel
Piles, Machine for forming jackets on....J. F. Whittle et al.
Pipe coupling....H. Shipp
Pipe line coupling....H. O. Loyd-Jones
Pipe threading and reaming device....L. S. Frost
Pipe wrench....O. W. Hall
Pitching machine....J. H. G. Zunner
Pitman connection....C. Pearson
Planting garlic, set onions, and the like, Machine for....J. A. Fritsch
Plows, Open moldboard for..A. P. Gubrud
Plumb bob....E. P. Garner
Plunger....W. S. Locke
Pneumatic cushion for vehicles....F. I. Baker
Porous bodies, Manufacturing..B. Schwerin
Porous, granular hygroscopic material....E. N. Trump et al.
Post hole digger....W. O. Goodwin
Power transmitting apparatus..A. Plagman
Preserving animal tissues and the products obtained thereby....J. R. Hatmaker
Press....H. C. McLearn
Presses, Retaining device for....P. Eberhardt
Priming device....J. L. Fischer
Printing appliance....J. P. Quiggan
Printing machine....C. A. Sturtevant
Printing machine....W. L. Green
Printing press (2 pats.)..C. A. Sturtevant
Printing presses, Paper feed attachment for under surface....W. H. Voorhees
Projectile-caps, Means for securing....T. Dixon
Pulley (3 pats.)....H. J. Gilbert
Pulp screen driving mechanism....L. F. Fales
Pump....J. McGeorge
Pump, Gravity....G. E. Smith et al.
Pump operating mechanism..T. J. Johnson
Pump register....W. C. Pritchard
Pump, Rotary....W. H. Deddington
Pump valve....J. N. Robertson
Radiator (2 pats.)....J. B. Beam
Rail brace....S. W. Joyal
Rail clamp....S. D. Steel
Rail clamp, Guard....S. Munson
Rail dressing machine (2 pats.)....M. Woods et al.
Rail joint....C. Stewart
Rail joint....R. L. Moore
Rail joint, Boltless....J. H. Ezard
Rail joint supporting device....W. Scott
Rail, Rack....F. L. Sessions
Rail tie and fastening....C. Baechler
Railway signal....L. E. Garnett
Railway signal apparatus...J. H. Alandar
Railway station platform....E. De Ryss
Railway system....J. E. Noeggerath
Railway tie....S. C. Turner
Railway tie and fastener..R. E. L. Maxey
Railway tie, Reinforced concrete....L. T. Lewis
Ram, Hydraulic....J. D. Weaver
Rammer, Hand....F. Wegener
Ratchet mechanism....G. O. Leopold
Reaming machine (Reissue)....G. Mateer
Receptacle closure making machine....H. J. Douglass
Receptacle, Commodity....D. H. Mosteller
Refrigerator....B. E. Grady
Resilient wheel....F. C. Oldham
Resilient wheel....L. Burdy et al.
Resistance means, Variable....E. R. Gill
Rings, Machine for rolling finger....H. Heurich
Rivet and bolt making machine....J. T. Wallace
Riveted structure....F. R. Henry
Riveting machine....E. Smith
Rock drill....M. E. Thomas
Rod holder....L. Arnt
Roofing material....C. Ellis
Rotary engine....J. H. Van Deveuter
Rotary explosive engine....O. F. Edqvist

Rotary internal explosion engine.....J. C. Christensen et al.
Routing machine.....A. G. Osmer
Ruler.....P. S. Shee
Saddle, Harness.....N. J. Sutton
Safe.....H. Beshore
Sand blast device.....W. Macleod et al.
Sash lock and lift.....W. Jansen
Seal.....G. H. Reid
Seal, Snap.....E. J. Brooks
Seat support, Spring.....F. J. Berry
Sectional brace.....E. Cooper et al.
Seed huller, Cotton.....C. A. Chandler
Seeds from corn waste, Machine for separating weed.....N. P. Pichula
Self oiling device.....J. Henning
Separator.....J. Hickey
Sewing machine.....J. P. Weis
Sewing machine.....F. J. T. Bell
Sewing machine attachment.....S. Smeja
Sewing machine bobbin case...J. C. Ringe
Sewing machine brake attachment.....C. E. Johnson
Sewing machine fan attachment.....R. C. Landers
Sewing machine, Filled sack.....G. E. and E. D. Scott
Sewing machine, Overseaming.....A. H. De Voe
Shade bracket, Window..A. W. Montgomery
Sharpener attachment for mowers.....J. and C. H. Ewe
Sharpener, Knife.....J. A. Seymour
Shoe buttons, Device for smoothing holes in resetting.....E. H. Magnus
Shoe cleaner.....F. Schimper
Shutter, Roller blind....J. Goddard et al.
Sign.....W. E. Booker
Sign character.....D. Kaber
Sign, Identification.....H. Sjovik
Sign or card clamp.....H. W. Ries
Signal device.....W. Thorsteinson
Signal device for drawbridges, &c.....G. R. Bock
Signal joint, Automatic block.....L. H. Kenney et al.
Signal receiving appliance, Electric.....J. G. Mitchell
Skate, Roller.....H. Simon
Skinning small animals, Suspension device for use in.....A. G. Heyerdahl
Slabs or blocks, Device for securing.....E. Diebitsch
Slipper with removable counter...A. Hale
Smoke bell.....M. S. Dambach
Smoke jack for engine houses...W. Sclater
Smudge mixer and sacker.....C. H. Burford et al.
Snap mold jacket.....E. H. Putnam
Soap dispensing machine.....G. F. Shaver
Soap handle.....S. Manheim
Soldering iron stove.....N. G. Barkers
Sole leveling machines, Shoe support for..E. E. Winkley
Spark arrester.....F. Slater
Spark generators, Short circuiter for reversed.....T. E. Madden
Spark plug, Combination....W. C. Brunt
Speed between driving and driven members, Mechanical movement for producing a differential.....M. Leith
Spring compressing and assembling device.....W. N. Titus
Spring structure.....O. R. Hunt
Spring wheel.....J. Kuehl et al.
Spring wheel.....G. Crawford et al.
Sprinkler head, Automatic....E. M. Long
Squeezing and pressing device....N. Nemes
Stamp mill, Ore crushing..P. R. Stanhope
Station indicator or advertiser.....B. R. Skinner
Steam detector, Waste.....F. J. Zerbee
Steam generators, Fuel and water regulator for.....R. Miehle
Steam or hot water heater.....A. Mauger et al.
Steering mechanism.....M. L. Williams
Step.....J. Hugyik
Stereotype plate molds, Matrix for...A. Egli
Stock or animal release, Automatic.....C. A. Benbow
Stoker, Mechanical.....H. M. Parson
Stool, Folding.....A. A. Meeker
Stopper.....W. H. Reddington
Stove, Mold drying.....P. Mongen
Strainer and egg-holder, Combination.....J. G. Shepard
Strap and drinking cup holder, Combined..R. Lublintz
Stump pulling and hoisting apparatus, Self anchoring.....A. M. Semran et al.
Swing.....J. S. Bohatka
Swing.....G. W. Schilling
Swing, Circle.....D. A. Reed et al.
Switch.....W. H. Kirkwood
Switch lock, Safety.....G. Marshall
Switch throwing device.....O. S. Weddell
Synchronical indicator or index for books, card systems, and records....S. J. Hare
Tacking mechanism.....J. Cavanagh
Talking machine.....H. Mikorey
Tap for acid containers.....J. Tombeur
Target.....B. W. Bates et al.
Telegraph transmitting machine.....F. D. Del Valle Atilles
Telephone exchange and fire alarm system, Combined automatic..J. W. Latig et al.
Telephone exchange system..E. E. Clement
Telephone exchange system...J. L. Wright
Telephone trunking system....F. M. Davis
Theaters, Means for handling hanging scenery in (2 pats.).....S. G. Bailey
Threshing and separating machine, Grain..T. A. Lewis
Ticket cutter.....H. W. Hargis
Ticket, Street railway transfer.....F. W. Shean
Tie and rail fastener.....M. Chila
Tie and rail fastener.....T. Baughman
Tire.....G. Gray
Tire, Automobile.....E. M. Hamilton
Tire fabric having annular elastic zones, Pneumatic.....L. A. Subers
Tire for vehicle wheels, Pneumatic.....L. A. Garchey
Tire inflation mechanism.....R. L. Foster
Tire for vehicles, Cushion.....W. S. Holmes et al.
Tire protector.....W. T. Dorgan
Tire setting machine.....C. A. Devero
Tobacco pipe.....H. E. Buttimer
Toilet case for vehicles....M. H. Strong
Tool, Portable geared rotary...J. W. Reed
Toothpicks, &c., Packing machine for.....M. W. Foster
Towel rack, Roller.....C. Gilbert
Toy, Figure.....H. L. Haskell
Track construction and rail clip...J. Noll
Track inspecting device.....I. S. Tyler
Track laying machine.....H. Carlson
Traction engine.....J. F. Boone
Train stop and signal, Automatic.....J. A. Demers
Train stop, Automatic.....L. A. Hawkins
Trap.....W. Cholewinski
Trolley.....S. Brauner
Trolley.....S. Rogowski
Trolley contact.....F. T. Cope
Trolley harp.....P. A. McCullough
Trolley, Overhead.....A. P. Lord et al.
Trolley retriever.....S. P. Kay
Trough or open flume.....W. Lennon
Trousers hanger.....R. Sybenga
Truck bolster.....A. E. Ostrander
Truck frame.....H. S. Hart
Truss.....D. MacKay
Tube filling apparatus.....A. J. Kier
Turbine.....A. Bonom
Turbine blade.....W. Grun
Turbine rotor.....R. O. Muller
Typewriter attachment.....C. P. Swank
Typewriter machine.....L. P. Polhuis
Typewriting machine.....F. W. Hillard
Typewriting machine tabulating mechanism.....O. Thieme
Typewriting machines, Platen mechanism for.....J. Raber
Umbrella.....H. Miller
Vacuum cleaner.....W. R. Fowler
Valve for fluid holding receptacles, Discharging.....M. Mauran
Valve locking mechanism for pneumatic tools, Automatic throttle..R. A. Norling
Valve, Plug.....S. S. Caskey
Valve reseating machine (Reissue).....R. H. Hazeltine
Valve, Safety.....D. Cockburn et al.
Valve spring lifter for automobile and other engines.....C. J. Wolff
Vat heater.....A. C. Sargent
Vehicle cushioning device....J. C. Sherman
Vehicle frame.....O. H. Farver
Vehicle running gear, Motor..D. M. Dearing
Vehicle wheel.....K. A. Read
Vehicles, Propulsion of motor....H. Pieper
Vending machine.....T. and W. Leemann
Vending machine.....A. Rydquist
Vending machine.....N. N. Neher
Vessels, Locking slip closure for.....G. W. Beadle
Wagon bolster spring.....N. L. Holmes
Wagon lifting device, Dumping....C. Pay
Warp stop motion.....W. H. Baker
Washing machine.....A. Lamarre et al.
Washing machine.....F. Radloff
Washing machine.....P. Werner
Water and shot feed coupling..W. I. Ravert
Water heater, Electric.....E. M. Hengell
Water heating furnace.....H. C. English
Water meter with revolving piston.....A. Monard
Waterproof battery and making same.....R. V. Villiers
Wheat heater.....J. G. Hagmann
Wheel.....W. Black
Wheel.....C. L. Schwarz
Wheels, Control of vehicle driving.....F. A. Eisner
Wheels, Knuckle connection and drive for vehicle.....L. Mayer
Wheelbarrow.....W. J. Taylor
Winding machine.....F. S. Rand
Winding machines, Tension mechanism for.....J. O. McKean
Window screen.....A. W. Hiney
Window ventilator and shade and curtain protector, Combined draftless.....G. Van Verst et al.
Wire drawing block.....J. H. Reece
Wire drawing mechanism..H. E. Wheeler
Wire rope clamp.....W. E. Belcher
Wire tie tool.....F. E. Beam
Wire tightener.....A. H. A. Dehlinger
Wire to frames, Machine for securing.....G. W. Darlington
Wrench.....F. H. Dickson
Wrench.....L. Halverstadt
Wrench.....B. A. Stocking
Wrench.....G. Jurkovich
Wringer.....W. M. Valentine
Yarn clearer.....C. N. Childs
Yoke, Safety neck.....J. N. Novotny
Zinc, Battery.....J. Beattie

Issued May 28, 1912.

MECHANICAL PATENTS.

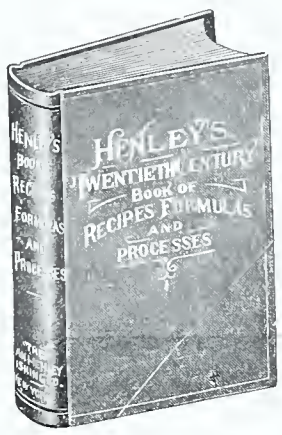
Abrading or cutting device....J. Hill, Sr.
Abrading wheel.....R. Gardner
Acid ester of meta cresol and manufacture of same, Ortho-oxalic.....L. Kahl
Adding and subtracting machine.....J. G. Vincent
Advertising device.....F. W. Brock
Advertising device, Street car.....W. F. Sweet
Aerial trolley....J. W. and E. C. Fawkes
Aeroplane.....J. W. Silver
Aeroplane.....J. A. Williams
Air gage.....J. A. Buttress
Air heater.....A. Schlueter
Air heating apparatus.....A. E. Jones
Air or steam joint, Flexible...E. J. Corbett
Air testing apparatus.....R. H. Davis
Airship.....B. C. Cole
Airship, Dirigible.....E. Bucher
Amplifier.....G. W. Pickard
Amusement apparatus.....H. N. Ridgway
Animal trap.....M. Klobusiak
Ankle supporter.....A. Quenzer
Annealing furnace.....H. Gartner
Annunciator apparatus.....M. B. Mills
Antiskid device.....L. S. Thompson
Anvils, Hardy attachment for.....C. C. and M. Gray
Attaching device.....H. J. Potter
Automobile fender.....J. K. Bond
Automobile wheel construction..O. Zachow
Automobiles, Differential gear for.....R. I. Fancher
Aviator protector.....F. Rilleau
Bag clasp, Shoulder.....C. B. Davis
Bag cleaning machine.....N. E. Gardner
Bag holder.....A. Dahlstrom
Baling presses, Feeder for....N. W. Young
Barrel cover.....A. F. Naylor
Barrette.....M. L. Pritzkow
Bearing, Antifriction (2 pats.)....H. Hess
Bearing, Ball.....A. Riebe
Bed, Invalid.....F. Miller
Bedstead.....E. Fischbach
Beet topper.....F. Briggs
Bicycle spring fork.....O. A. Eckre
Bin.....E. J. Walker
Binder, Loose leaf.....E. E. Buchan
Bleaching straw.....P. E. Wickham
Boiler cleaner.....L. J. Bayer
Boiler furnace, Steam.....H. A. Poppenhusen et al.
Boiler, superheater, and like tubes, Apparatus for sealing and cleaning steam.....A. B. Kendal et al.
Boilers, &c., Machine for forming lugs for.....W. Horsley
Book for deliberative bodies, Minute.....H. Doebler
Boot and shoe uppers, Machine for forming.....K. Engel
Boring bar.....J. G. Lugenbill
Bottle closure.....G. G. Loehler
Bottle, Non-refillable.....N. J. Fortunesco
Bottle, Non-refillable.....J. C. Bayer
Bottle, Non-refillable.....J. Wolfinger
Bottle, Non-refillable.....J. R. Mullin
Bottle pitcher attachment, Milk.....E. H. Jungelas
Box.....A. Paradis
Boxes for flies, Machine for applying paste to.....A. L. Patterson
Brake head.....C. W. Armbrust
Brick.....G. H. Emery
Brick for cupolas, Breast wall.....R. P. Cunningham
Bridge, Lift (2 pats.)....J. L. Harrington
Broom.....L. and F. Nair
Buckle.....A. Bienenzucht
Building stones, Machine for making.....W. A. Todd
Burner.....R. C. Frampton
Burner.....E. G. Schwartz
Butter separator, Aerating.....A. Fay
Button.....S. Gogel et al
Button covering fabric.....G. E. Clauss
Button retainer, Collar.....H. Hoflander
Cabinet Nursery.....A. V. Cassity
Cabinet, Stationery.....T. A. Matthews
Cabinets, Fastening device for panel-board.....F. B. Adam
Cable cutting device.....H. C. Smith
Calculating device, Roof rafter.....D. Robertson et al.
Can opener.....F. E. Rollins
Can opener and sealer.....F. E. Teves
Cans and the like, Closer for.....W. H. Perkins
Candle holder.....J. P. Raoux
Caps, Making metal.....O. Zerk
Car, Dump.....J. R. Bowling
Car Dump (2 pats.).....F. S. Ingoldsby
Car, Dump.....F. S. Ingoldsby et al.
Car grain door.....W. W. Allen
Car roof.....H. Pries
Car switch, Electric.....L. Radcliff et al.
Car unloader.....E. V. Richards
Carbureter.....R. E. Wood
Carbureter.....D. Barnard
Carbureter.....W. E. Roby
Carpet stretcher.....J. A. G. Seybold
Cartridge blank receiver.....L. R. Smiley
Casket, Burial.....C. H. Wible
Caster, Adjustable.....H. D. Bolinger
Cattle guard.....E. Engle
Cellulose products, Manufacture of.....A. Chaumat
Cellulose, Solvent for acetyl (5 pats).....W. G. Lindsay
Chain housing, Sprocket.....A. P. and W. E. Hoffman et al.
Chains, Manufacture of..F. S. Morris et al.
Chair attachment, Barber...W. H. Smith
Chair fan attachment, Rocking.....A. Kuring et al.
Chairs, tables or the like, foldable frame for.....A. G. Cole
Character forming machine..T. M. Lilleberg
Check receiving recorder, Time-controlled workman's.....H. Bates
Cheese, butter, soap, lard, &c., Appliance for cutting.....J. Ashton
Chlor-aralkyl-sulfo-chlorids and making them.....O. Schmidt
Chuck, Vibratory.....J. P. Cleal
Cigar machine.....R. H. Logan
Cigar or cigarette case.....S. C. Hignett
Circular kiln or oven.....J. Lunt et al.
Clocks, Date indicator for.....S. Baumbartner-Hartmann
Clothes line reel and stretcher..C. Johnson
Clothes washer.....C. H. Hyman
Clutch, Fluid operated.....J. R. McGiffert
Coating machine.....F. E. Goldsmith
Cock and faucet.....P. S. Hamrick
Coke oven.....E. Hohmann
Coke oven.....T. von Bauer
Collapsible tube.....G. D. Hazen
Comforter filling machine....J. R. Sheldon
Composition of matter (3 pats).....J. R. C. Marsh
Computing machine.....J. T. Hurley
Concrete building apparatus..R. W. Fuller
Concrete cross tie, Reinforced..A. F. Wilson
Concrete sign, Individual.....L. G. Haase
Controlling device.....N. C. Durand
Cooling board.....M. Smysor
Cooling device.....L. E. Laranee
Copper, Refining.....W. S. Rockey et al
Cord for use in the manufacture of chairs or other articles.....H. B. Morris
Core chaplet.....E. W. Smith
Corn drier, Seed.....T. C. Sime
Corn grader, Seed.....C. Hunnicut
Corn husker.....W. L. Stallard
Cotton chopper.....L. E. Bowser
Cotton picker.....L. Willman
Coupling.....C. E. Wright
Coupling device.....S. F. Leslie
Cranking device, Automatic.....W. H. Withers et al.
Crate.....J. Wahl
Crate, Poultry.....G. D. Ross
Cue tip fastener.....T. N. De Witt
Cultivator.....W. E. Mikesell
Cultivator draft equalizer.....C. E. King
Current motor.....E. Cox
Curtain fixture.....J. Werner
Cuspidor, Sanitary.....N. Winsze et al.
Cutting device.....E. A. Stiggins
Cycle seat attachment, Motor.....F. R. Covey et al.
Cycles, Detachable mud guard and dress protector for motor.....G. H. Blake
Dark chamber, Portable folding..W. Macke
Denture.....L. Greenbaum
Detachable spindle.....C. B. Wilson
Detersive agents, Manufacture of.....R. Macpherson et al.
Dish, Butter.....A. A. Fordon et al.
Display apparatus.....H. Holden
Display cabinet.....C. A. Hamilton
Documentary distributing device.....W. L. Deming
Door and window opening.....G. A. Berlinghof et al.
Door hanger (2 pats.)..F. W. S. Elstroth
Door hanger.....H. L. Ferris
Door hanger, Releasing.....J. L. Rifer
Door hanger track.....H. L. Ferris
Doubletree.....H. E. Livingston
Dough mixer and kneader..O. D. Woodruff
Draft appliance.....P. E. Waldvogel
Draft equalizer.....W. J. Campbell
Drawing and music case.....J. Jorg
Drier.....T. M. Wilson
Drill casing pulling stand....A. C. Ludium
Dyeing apparatus.....D. M. Hey
Dyestuffs, Manufacture and production of fast ortho-oxy-azo.....K. Elbel
Economizer, regenerator, and the like.....W. Mathiesius
Electric heater, Flexible.....L. C. Rhea
Electric light fixture, Portable (3 pats.)..L. A. Williamson
Electric process.....R. J. McNitt
Elevator.....M. C. Schwab
Elevator guide rail lubricator..L. Schultheis
Elevator safety device.....W. H. Graham
Embroidering machine, Automatic..R. Zahn
Engine regulator, Explosion..C. C. Stedman
Engine safety cranking device, Explosive (2 pats.).....J. L. Beck
Engine starter.....E. Guthrie
Engine starting device, Gas..W. A. Hansen
Engines and the like, Producing barrels of ovate section for rotary.....H. Lee
Engines, Balancing two-crank.....F. B. K. Schubert
Engines, Pipe supporting system for locomotive.....A. R. Ayers
Envelop opener.....C. H. Crawford
Equipoiser.....G. Hipwood et al.
Eraser holder.....T. P. Kruger
Evaporator.....O. Faller
Excavating scoop for wire rope haul.....A. McGillis
Explosive charges, Tool for preparing ground to receive.....S. Rand
Eyeglass mounting.....G. A. Bader
Eyeglasses and spectacles, Repair device for.....C. M. Haynes
Fan, Air propelled car..J. L. Council et al.
Fan for baby carriages.....J. Belley
Faucet, cock, or the like.....C. E. Weeks
Feed and litter carrier.....H. L. Ferris
Feed cutter.....C. F. Haldeman
Feed regulator.....F. Prinz
Feeder for chickens, pigeons, and the like, Automatic self.....E. H. Mills
Fence post.....W. C. Gambrel
Fence post, Metallic.....B. Schultz
Fender.....W. G. Naughton
Fertilizer distributer.....C. B. Clark
Fertilizer distributer and planter.....C. B. Clark
Filter.....M. A. Moore
Filters, Making.....H. Passow
Filtering can and the like....J. F. Hocker
Finger exercises.....J. R. Manners
Fire box and grate.....Z. F. Jones
Fire escape.....E. H. Haney
Firearm.....B. H. Savage
Firearm.....G. W. Peck, Jr., et al.
Firearm, Automatic repeating.....O. H. J. Krag
Fireproof building construction...C. Collins
Fireproof construction clip..J. F. Makowski
Flask clamp.....E. C. Covert
Flax and the like, Machine for working.....S. Walker
Floor scraper.....F. J. Vandraeek
Fluid compressor.....H. D. Hildebrand
Fluid compressors, Unloader for (2 pats.)..W. Prellwitz
Fluid compressors, Unloader for compound.....W. Prellwitz
Fluid pressure brake (2 pats.).....W. Y. Turner
Flume.....C. H. Ramsden
Flushing apparatus..R. H. O. McDonough
Fly trap.....W. J. Hamilton
Folding carrier.....J. H. McAllister
Folding mechanism.....C. L. Johnston
Food compound, Making a.....C. Driscoll
Freezers, churns, &e., Dasher for.....H. Griswold
Friction transmission mechanism, Changeable speed.....I. B. Hammond
Fruit elevator.....F. Stebler
Furnace.....E. W. Rice
Furnace construction....J. B. Ladd et al.
Furnaces, converters, &e., Apparatus for supplying air to blast....R. H. Sweetser

Galloeyanin compounds and making same..H. Mansfield
Game apparatus.....V. W. Hall
Garment hanger.....M. A. Gilman
Gas burner safety device....L. W. G. Flynt
Gas burners, Cylinder or globe for inverted incandescent.....A. P. Storrs
Gas burners, Gas controlling mechanism for.....E. O. Bentley
Gas burners, Needle valve for.....A. G. Thomas
Gas controller, electrie time switch, and other timing device.....A., G. O. H., E. H., and S. A. Horstmann.....et al.
Gas cut-off, Automatic.....R. A. Mack
Gas generator, Aeetylene.....P., W., and I. Minter
Gas light fixture.....J. Maas
Gas, Manufacture of.....W. H. Williams
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Gas trap, Sewer.....F. E. Cudell
Gases, Liquefaction of.....G. Claude
Gasket retainer.....J. W. Ramage
Gasoline generator.....H. C. Hanson
Gate.....G. W. Kemp
Gearing, Transmission.....R. B. Jackson
Gearing, Variable speed transmission.....H. B. Ross
Gears, Suspension frame for transmission..E. M. Sternberg
Glass furnace.....V. Thenis
Glassware manufacturing apparatus.....J. Schies
Glove, Reversible.....I. L. Casler
Go cart.....W. E. Pugsley
Grader, Road.....A. J. Hansen
Grading machine, Road.....O. D. Park
Grain shredding maehine.....F. Regnier
Grate.....C. W. Foster
Grease cup.....J. B. Hall
Grease cup filling attachment..M. G. Brown
Grille work or grating, Eleetrically protected.....J. P. Williams et al.
Grip handle, Detachable..O. J. Hanson et al.
Gun sight, Front...G. W. Peck, Jr., et al.
Gun sight, Rear..G. W. Peck, Jr., et al.
Guns, Liquid recoil brake for....E. Voller
Hair ornaments, Machine for making.....W. J. Hines
Harrow eleaning attachment..H. E. Smoek
Harvester, Pea.....E. O. Hntsell
Hasp loek.....M. Milewski
Hat and veil pin.....R. J. Heaveurieh
Hat holder.....L. Viezzi
Hat rack, Portable.....J. W. Craft
Hay grinding machine.....S. C. Roberts
Hay loader.....C. O. Davis
Hay loader.....A. Otto, Jr.
Head gate.....A. Robertson
Heading up machine.....E. F. Bengler
Heat economizing means..J. M. W. Kitchen
Heating apparatus.....B. C. Allen
Heating furnace, Continuous.....G. C. Shackleford et al.
Heel, Apparel shoe.....M. Lage
Heel seat rounding machine....J. V. Allen
Hinge.....N. Shields
Hinge.....C. Hartman
Hinge artienlator.....H. Schweitzer
Hinge, Door.....J. R. Fletcher
Hinge, Spring.....P. E. Howard
Hoisting apparatus.....A. E. Norris
Hoisting sling.....T. J. Sammon
Horseshoe.....W. M. Fletcher
Horseshoe.....J. A. Billado
Hose, Maehine for manufaeturing.....A. C. Bolton
Humidifier and disinfector.....F. Kocher
Hydraulie press for producing hollow earthenware bodies.....E. Dor-Delattre
Hydrogen. Apparatus for the separation of.....C. Von Linde
Hydrogen from a gaseous mixture, Apparatus for the separation of..C. Von Linde
Ice ean.....F. F. Bentley
Ice cream cone machine.....L. H. Lanier
Igniting device.....A. Ehlert
Igniting device, Pocket...R. E. Ramsdell
Imprinting euvelops, &c., Machine for.....U. C. Davis
Indigo coloring matters, Reducing.....W. Gaus
Induction synchronous motor.....C. H. Kicklighter
Insole, Composition.....O. F. Fogelsong
Insulator and support.....L. F. Gressett
Insulator in junction boxes or the like, Terminal.....R. Diebel
Insulator supporting device.....C. G. Ette
Internal combustion engine..M. L. Williams
Iron albuminous compounds containing phosphorous, Preparing (2 pats.).....F. Zuckmayer
Iron glycero phosphate combined with milk or milk albumin, Making a soluble compound of.....P. Hoering
Iron or steel, Refining....K. A. F. Hiorth
Ironing board.....F. G. Hoffine
Isolated alkali salts of indoxyl and making same.....A. Schmidt
Kinetoscope.....E. P. Hopkins
Knitted fabric.....G. W. Cummings
Labeling machine.....F. O. Woodland
Ladder.....C. E. Dillon et al
Ladder support.....J. W. Johnson
Lamp.....H. A. Douglas
Lamp and refleetors for same.....C. H. Kruger et al
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Lamp cord reel.....B. F. Miller
Lamp globe holder.....R. L. Gladden
Lamp shade holder, Incandescent.....H. H. Palmer
Lamps, Fixture for vacuum tube.....D. M. Moore
Lath, Clip for attaching metallic.....H. E. White
Lathe.....E. L. Mills
Leather loop finishing press..A. L. Lilley
Level, Spirit (2 pats.).....C. C. Finn
Lever.....C. B. Purdy
Lifting jack.....H. V. Miller
Light shield.....W. N. McComb
Line easting machine.....H. Drewell
Linotype machine.....W. M. Rapp
Linotype mold.....A. W. Le Boeuf
Liquid fuel burner.....H. W. Schoff
Liquid mixer and distributer.....H. Luckenbach
Liquid safety gage.....F. Gettelman
Lithographic press.....G. G. Goodike
Loading and unloading means, Vehicle.....F. A. Kenney
Lock.....E. O. Vann
Locomotive.....R. N. Lowry
Locomotive, Railway.....T. H. Brigg
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Loom selvage motion.....C. Lavallee
Loom shuttle (2 pats.).....G. J. Dustin
Loom stop motion.....A. G. Koechlin
Loom temple.....J. Northrop
Lubricating device for wheel flanges.....C. L. Tanner
Machine tools, Apparatus for electrically controlling.....C. Kramer
Magneto, Inductor.....R. C. Lamphier
Mail bag and bag support.....H. T. Cook
Mail bag deliverer mechanism..B. F. Nicoll
Marker, Land.....W. H. Jones et al.
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Measuring instrument, Electrical.....W. E. Beede
Memorandum pad holder.....J. Costello
Metal plated article.....E. L. Watrous
Metal sheets, Means for feeding.....O. Dempewolf
Metal tubes, Continuous process of manufacturing.....M. B. Lloyd
Metal tubes, Manufacturing.....M. B. Lloyd
Micrometer feed mechanism....M. Kronert
Micrometer gage.....H. E. Eddy et al.
Milk, cream, and water cooler.....J. P. Emery et al.
Mining tools or machines, Support for.....W. Prellwitz
Mirror, Angular.....C. von Hofe
Mirror panel, Metallic.....A. Hendricks
Mixer.....J. H. Brodie
Moistener, Envelop.....L. Ferenczy
Moistener, Stenographer's envelop and stamp.....B. H. Dunfield
Molding machine.....E. C. Covert
Monkey wrench.....W. L. Stevenson
Mop, Sanitary.....J. J. Phare et al.
Motor control system.....A. M. Gray
Motor control system, Electric.....A. J. Horton
Motor controller.....T. E. Barnum
Mower, attachment, Lawn...J. J. McMillen
Mower, Lawn.....K. Ruch
Mowing machine.....O. Czaran
Mowing machine.....W. E. Martin
Mowing machine attachment.....G. M. Crowder
Muffler.....S. W. Forney
Muffler cut out.....C. W. Stryker
Nitrocellulose, Solvent for (2 pats.).....W. G. Lindsay
Nozzle, Hydraulic.....W. A. Doble
Nut lock.....E. A. Hodge
Oil burner, Crude.....O. B. Dawson
Oil cup.....W. H. Brassel et al.
Orchard heater.....E. O. Carver
Ore roasting and sintering apparatus (Reissue).....A. S. Dwight
Ores and product resulting therefrom, Roasting and sintering (Reissue).....A. S. Dwight
Organ, Folding.....B. N. Hanson
Outlook table.....F. B. Knapp
Oven or cooker, Electric..C. A. Lauzon
Package fastener.....I. D. Kress
Package receptacle.....F. A. Selle
Packages, String fastener for.....E. H. Johnson
Paint remover.....C. Ellis
Packing for rotary engines.....F. A. Parsons et al.
Pancreas preparation suitable for the treatment of diabetes.....G. Zuelzer
Paper box blanks, Device for cutting and scoring.....M. P. Daven
Paper towel and napkin package.....W. H. Bond
Pasteurizing apparatus...A. A. Pindstofte
Pattern generating apparatus..F. H. Perry
Pen point releaser.....R. B. Thompson
Permutation lock.....E. E. Quaintance
Personal cooler.....M. E. Hostetler
Phonograph motor signaling devicee.....C. Schiff
Phonograph record mold.....A. F. Wurth
Phonograph records, Apparatus for making duplicate.....J. A. Aylsworth
Photographic printing frame.....C. E. Johnson
Photographic process basket...M. S. Pelton
Pliers and wrench, Combined adjustable.....J. H. Collister
Plow, Reversible.....P. Trimble
Picture machine, Moving...J. B. Johnson
Picture mechanism, Talking moving.....O. E. Kellum
Pin guard.....C. O. Nilsson
Pin tumbler lock having interchangeable cylinder extensions.....J. H. Shaw
Pipe.....C. Elkin
Pipe connection.....L. F. Breaker
Pipe reamer.....J. R. Desjardins
Pistol attachment.....J. A. G. Marshall
Plow, Corn.....A. W. Daniels
Pole cross arm (3 pats).....C. G. Ette
Poles, Metallic cross arm for....C. G. Ette
Polishing or grinding wheel guard.....F. W. Kohlmyer
Power transmitting mechanism for motor vehicles.....F. A. Kirby
Pressing machine.....H. Price
Priming mixture.....W. H. Buell
Printing press.....P. F. Cox
Printing press inking apparatus.....R. T. Johnston
Printing press slip-sheet feeding device (2 pats.).....H. M. Barber
Projectile.....O. A. Yingling
Projecting device.....A. J. Stevens
Pulley.....R. H. Bowen
Pulley, Metal.....H. P. Gale
Pump.....C. L. Parker
Pump, Air.....G. J. Spohrer
Pump, Air.....C. F. Snyder
Pump for corrosive fluids.....U. Wedge
Pump plunger, Expansive....C. L. Parker
Pump, Self cleaning ball valve.....C. L. Parker
Pumps and similar devices, Self acting valve for.....P. Brenner et al.
Pumps, Automatic balance for centrifugal.....A. C. Panlsmier
Puzzle.....H. B. Cleveland
Racket case and press..I. C. Wright et al.
Radiator, Combined steam and water.....S. D. Stauffer
Rail fastener.....L. Sexton
Rail joint.....F. Marinies
Rail joint.....W. H. Wiltshire
Rail joint.....C. R. Keck
Rail joint, Splice.....W. L. Lyons
Railway Marine.....R. O. Gallinger
Railway signals and the like, Controlling device for.....W. Reid
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Rubber overshoe.....A. E. Roberts
Ruling machine.....C. Burrows
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Sad iron and terminal box, Electric.....L. F. Parkhurst
Sad iron Electrically heated..E. L. Pollard
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Sandpapering machine.....F. Schimmel
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Sashes, Window holder for sliding.....W. S. and E. J. Mason
Saw setting device.....A. S. Harris
Saw tooth.....W. Vollmer et al.
Scarf.....T. Ziok
Scarf pin retainer.....R. Corn
Scraper.....J. W. Champion
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Screw cutter.....C. B. Burns
Screw driver.....I. L. Messenger
Screw threads, Tool for cutting interior..G. A. Peddle
Seal, Dripless pouring bottle..C. S. Jackson
Seal, Lead.....C. Sismondi
Seal, Snap.....E. J. Brooks
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Teaching shorthand, Means [illegible]
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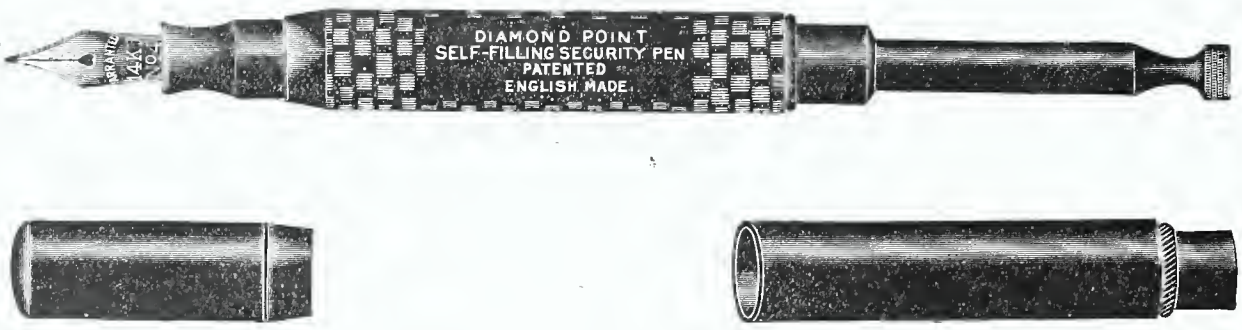
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VOL. XXIV. NO. 8. } WASHINGTON, D. C.—AUGUST 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

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AUTOMATIC SUBMARINE SIGNALING.

By FRANK C. PERKINS.

SUBMARINE signaling apparatus, as now extensively used, is divided into several classes. These include electric signal devices, those operated by compressed air and the automatic and hand apparatuses. There is no doubt that the possibilities of submarine signaling are remarkable and modern equipment is being developed to a most efficient state. Submarine signals can now be made to do in thick weather what a light does in clear weather: i. e. tell a ship of her danger in ample time to avoid it. After days of dead reckoning, a captain can learn where he is and have a mark from which to lay his course. The position of an approaching ship can be accurately determined, and all danger of collision avoided. By means of submarine signals, a

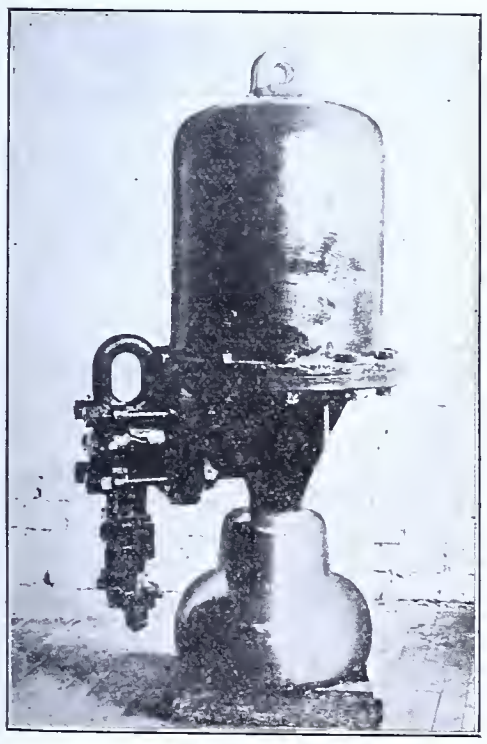


FIG. 1.—ELECTRIC SUBMARINE BELL.

liner can pick up her tender, find her way into a harbor and locate her pier, and a fishing schooner need lose no more dories. It is claimed that in time of war it is possible to do away with lights altogether and guide vessels from points unknown to the enemy. The home fleet can leave its harbor and return in safety, while navigation for the enemy will be too dangerous to attempt.

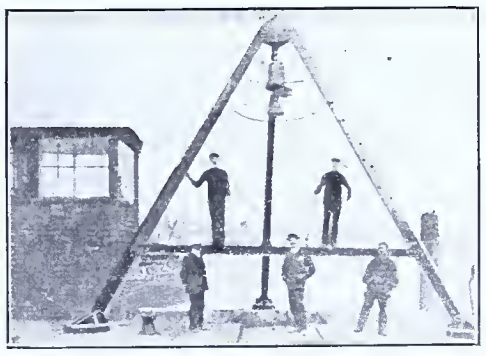


FIG. 2.—ELECTRIC BELL TRIPOD.

Submarine boats can communicate, and will be able to maneuver in flotilla and make converging attacks. Submarine signals open the possibility of navigating in thick weather as safely as in clear weather and of removing the most serious danger now known at sea. The real problem is the development of efficient apparatus for sending and receiving sound under water. The accompanying illustration, Fig. 1 shows the construction of an electric submarine signal bell, while Figs. 2 and 3 show an electric bell tripod and the method of fastening the shore end of the electric cable.

Submarine signals as at present developed serve as accurate and reliable coast warnings, and in thick weather give the same service that lights and marks give in clear weather. All trans-Atlantic liners bound for New York try to pick up the Nantucket light-vessel, for this is where they make their turn and is the point of departure from which they lay their course for Fire Island. If they fail to pick it up, the run to New York is full of anxiety and danger. Submarine bells in the English Channel and in the North and Irish seas enable liners to run from point to point with confidence, and do away with the dreadful uncertainty of fog. The Cherbourg tenders equipped with bells steam outside the harbor and act as guides for the liners coming in, thus saving much



FIG. 3.—METHOD OF FASTENING THE SHORE END OF THE ELECTRIC CABLE.

valuable time and avoiding the danger of a close approach to the coast in fog.

The service that submarine signals render is not confined to life and property. Their value for saving time also was well illustrated by an incident at Bremershaven some years ago, when the S. S. Kaiser Wilhelm II reached the mouth of the Weser together with several other vessels which were not equipped with submarine signals. By means of her submarine signal apparatus she was able to pick up the Weser lightship and enter the harbor, where she found the fog lifted, and discharge her passengers and cargo. It was twenty-two hours before the weather cleared outside and the other vessels could make port.

For deep sea work the electric apparatus consists of an electric bell with tripod, connecting cable and power plant. The tripod is used for supporting the submarine bell, a cable leading from the bell to the shore station, and there is a marking buoy with an anchor chain for marking the location of bell.

For supplying the current there is usually an internal combustion engine and dynamo employed, with a duplicate set for use in case one set is out of repair. An electric switchboard is utilized, together with an electric code ringer. As seen in illustration Fig. 1, the electric bell consists of a 220 pound bell about 15 inches in diameter, attached to a case containing the actuating mechanism. This is very simple in construction. A large electro-magnet attracts a disc-shaped armature, attached directly to a rod which moves the hammer of the bell. The bell mechanism and case together weigh about 900 pounds, and measure over-all 19 inches in diameter by 50 inches high. As noted in Fig. 2, the bell is suspended from a tripod which rests on the bottom of the ocean. This tripod is made of steel channel irons, and is about 21 feet high and weighs 5,000 pounds. It must be placed in

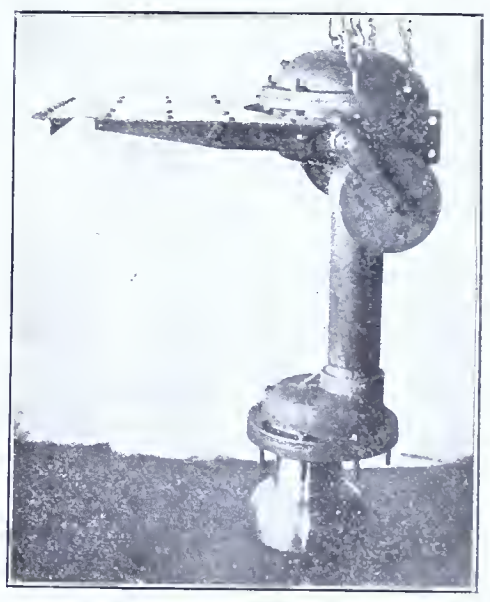


FIG. 4—BELL BUOY AND MECHANISM CASE, VANE AND BELL REMOVED FROM RECEPTACLE.

water sufficiently deep to enable vessels to pass over it without striking. A submarine cable leads to the shore from the electric bell, as seen

in photograph Fig. 3. In practice it is not desirable to have the cable over seven miles long, as at greater distances high voltages are necessary. Two styles of cable are used, known as "Shore end Cable" and "Deep sea Cable."

The deep sea cable is about one and a quarter inches in diameter and contains four copper conductors, which are covered with a rubber insulation and are held together by a covering of jute and steel armor wire. Two of the conductors are to supply current for ringing the bell, and two are telephone wires. The shore end cable is the same as the deep sea cable, except that it is one and seven-eighth inches in diameter, having two layers of armor wire instead of one.

It runs from the shore into water deep enough to be unaffected by wave motion, and there is a splice to the deep sea cable, which runs the remaining distance to the bell. The plant for generating the electric current is placed in the shore station. For distances up to five miles, a three horse-power gasoline oil engine driving a 250-volt 4-ampere dynamo is sufficient. For greater distances a somewhat more powerful set is required. There is an electric controller driven by the engine, containing an electric switch which is operated by dogs on a wheel passing over it. Each time a dog strikes the switch an electric circuit through the dynamo and bell mechanism is closed, thus ringing the bell. The dogs are so placed on the wheel that any desirable code may be rung by the bell. There is a voltmeter and ammeter for indicating respectively the volts and amperes of the electric current on the switchboard in the station, together with the necesary switches for connecting the dynamo and electric controller to the cable.

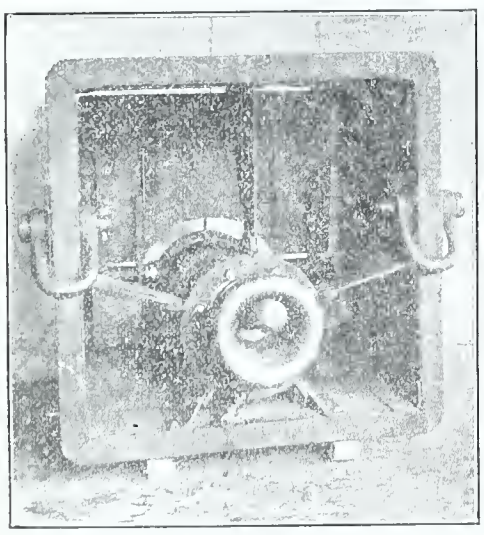


FIG. 5.—BELL BUOY AND MECHANISM CASE, VANE AND BELL SHOWN BOLTED IN PLACE.

There are also provided two electric lights, and a rheostat for regulating the dynamos. On the switchboard there is a telephone receiver, connected with the two telephone wires in the cable, which in turn are connected with a microphone in the bell case. By this means the engineer in the shore station can hear whether the bell is ringing properly. The submarine electric installation is particularly well adapted to be uesd in connection with a lighthouse, where there is already a keeper who can operate it as part of his duties. The same electric apparatus can be used for lightships and pierheads, with a different sized cable and supporting means adapted to the conditions.

The automatic bell buoy mechanism is most interesting in its operation. That seen in Fig. 4 consists of a mechanism with bell attached, which is usually hung from a special can buoy, but which may be attached to any type of buoy able to support it.

The buoy consists of a cylindrical float with crowned ends, about 8 feet in diameter by 7 feet high. On the bottom of the buoy is riveted a framework to which is attached a receptacle or square tube 4 feet square by 5 feet long, made of boiler plate. This receptacle is open at the top and bottom, and contains the mechanism for ringing the submarine bell. The bell itself projects slightly below the bottom of the receptacle.

The mechanism for ringing the bell is enclosed in a water-tight case containing oil, which thoroughly lubricates the moving parts and also prevents their being corroded by contact with the salt water. Through one end of the mechanism case passes a horizontal shaft, to which is fastened a vane which nearly fills the opening in the receptacle.

This device is held in a horizontal position by means of two counterweights attached to the shaft at such an angle as to balance it in that position. As the buoy moves up and down with the waves, the water passes through the receptacle, first one way and then the other, causing the vane to rock its shaft. As it does so, by means of gears and ratchets a spring attached to the hammer arm is stretched until the desired tension is produced, when it is released. This rings the bell. The frequency of the blows depends upon the action of the waves on the the buoy, but the strength is always the same, as the spring is stretched equally for each blow. This is important, as it is necessary to have uniform blows to enable vessels to obtain the direction of the buoy. The mechanism is also accumulative. One slight movement of the vane may not be sufficient to cause the bell to ring, but a number of such movements will make it ring, as each does its part in stretching the spring. In an ordinary spring the bell will ring about fifteen blows a minute and observations show that on the ocean there is always sufficient movement, even in apparent calm, to ring the bell several times a minute. There is a small tank of oil inside the float connected with the mechanism.

The submarine bell used on this buoy is of the same type as that on pneumatic and electric bells. The weight of the bell, mechanism, case receptacle and supporting straps is about 6,000 pounds, and the over-all dimensions 8 feet in diameter by 26 feet long. The advantages of a submarine bell buoy over other submarine signal sending apparatus are its low cost of maintenance and its continual ringing, which gives the mariner a chance to listen to it in fair as well as stormy weather, thus making him familiar with its sound and with the use of his receiving apparatus.

SCHEME PATENT ATTORNEYS.

By PHILIP EDELMAN.

Perhaps the most regrettable feature of our patent procedure at the present time is the matter of the scheme patent attorneys who constitute a part of it. There is no feature which can be condemned more than the part which these tricksters play in the trade. It is the purpose of the present article to point out the manner in which they operate, the harm which they do, and the remedies for the evil. Although no specific names are mentioned, the statements which follow are all based on facts and the names of the parties are no secret. Other remedies failing, it is hoped that publicity will in itself force these concerns out of business.

As is well known to those who are familiar with the patent situation, there are some 60,000 applications for United States patents filed each year. Of this number, some 30,000 are allowed within a year, and some are subsequently allowed. The number of patents applied for and never allowed amounts to a little over one-third of the total. It may also be estimated that about 200,000 cases each year never reach the Patent Office but are abandoned after the preliminary search stage. The number of foreign applications is also considerable. There is an enormous volume of business from all these cases and according to one directory, there are almost 6,000 persons classified as patent attorneys.

An alarming percentage of patent cases are in the hands of a relatively few concerns which have grown so rapidly through their methods that they have come to be veritable patent application factories. These concerns, operating under the name of an individual or corporation, instigate thousands of cases each year. That their methods yield big profits is obvious; indeed it appears that their very profits enable them to continue their operation. To be sure, there are several small concerns and individuals whose methods are not commendable, but they are less formidable.

It is understood, of course, that this article refers only to concerns whose methods are unworthy, and should not be construed to apply to honest attorneys.

Since the methods employed are similar and all have the filching of money from unwary persons as the chief object, the concerns referred to may be termed, "Scheme Patent Attorneys." The scheme patent attorney merits disbarment if nothing worse. He can generally be told by his advertisements. There is nothing wrong in advertising, and some of the best attorneys have advertised without lowering their professional standing. The only evil, then, is in *how* the advertising is carried on. The scheme patent attorney spends thousands of dollars from his profits each month to stir up stale inventions and to draw unsuspecting persons into his meshes. He flares from nearly every publication with his golden bait. He uses whole pages to prove his asserted ability, with photographs, pictures, reference lists, four and five place figures, arrows, cartoons, and all. "Fortunes in patents: Ideas wanted: Patents obtained or fee returned; No advance fee: Free!; Free searches; $1,500 offered for one invention: Money in ideas; Patents bring wealth: $50,000 offered for an idea; Patents bring riches," and many similar catch phrases are used freely in his advertisements. A few even go to greater lengths, and we find some advertisements creating the impression that there are enormous prizes for inventions, "One million dollars offered for one invention and $10,000 for others," etc. Almost all of these advertisements offer a number of free books purporting to tell how to obtain a patent, what to invent, how to realize great returns, how purchasers bought patents obtained through their concern, and so on. Some state that they advertise their clients' inventions free in the newspapers and create the impression that they give their clients many other valuable benefits. Still others offer to procure patents on the installment plan, i. e. $15 down and so many dollars a month. Still others use the blind advertisement, and persons answering a particularly alluring advertisement receive a mess of attorney's literature by return mail. Some merely advertise, "Ten dollars for the names of inventors: apply to Box —— Washington, D. C." and rely upon this to bring them clients. All these and others may be seen in both newspapers and magazines, in classified and in display columns, and are doubtless familiar to the readers.

And thousands of citizens in all parts af the country swallow them hook and all. Like catalysts in chemical reactions, the effect of these advertisements is to cause many persons to believe that they can obtain the riches mentioned. It is only human nature. Even persons with experience in other matters are taken in by the alluring announcements. People want to believe it is true, that they can get a fortune from their ideas, and they do believe it. Many are in such financial circumstances that this method appears their one opportunity —their great chance. Who can blame them for being taken in?

The scene then shifts to the attorney's office where an office girl or boy enters the name of the prospective client on the mailing list and the first batch of literature and a personal form-letter is sent out. Some include engraved guarantee contracts, blanks and sketch paper for drawings of the supposed invention, tags for supposed models and similar matter. This is likely to be cleverly arranged, with the client's name inserted and all made to appear personal. Many of the booklets sent out are quite expensive-

ly gotten up while others are prepared with apparent haste and cheapness.

This printed matter is uniformly extravagant and is notoriously deceptive. The average first batch contains considerable good advice as far as it goes, but it does not go far enough. It is generally brightened up with pretty pictures, colored covers, certificates and the like. Generally one of the booklets is devoted to a great list of recommendations calculated to convey the idea that the attorneys are personally known for their reliability to many Congressmen, prominent men and manufacturers, and that they are full of virtue. A long series of letters of recommendation from former clients is also included, which it may be remarked are uniformly from inexperienced patentees written at the time of receipt of the patent papers. The scheme patent attorney seems to have no difficulty in obtaining a vast array of references, and is secure for this very reason.

Most of his literature is clearly misleading. Some is worded to create the impression that the attorneys have particular facilities for securing better and prompter service than other attorneys, that they are super-responsible by reason of a $10,000 bond, that only a few attorneys are entitled to call themselves, "Registered attorneys," that they make free searches for the sheer delight taken in aiding inventors—in short that they do many wonderful things which they never do or can do. Their literature is replete with promises and glowing exaggerations. That anyone can accept it is almost beyond belief. We find direct contradictions in the same booklet. It is stated that free searches are made to ascertain patentability and a few paragraphs later, it is stated that preliminary examinations into the records of the Patent Office are made for the nominal fee of $5. A fine distinction, indeed! Many are doubtless misled by this tricky difference in wording. Without qualification, these so-called free searches cannot be what they purport to be. How can any honest attorney spend money to obtain names and give his services free? Gilded and colored certificates to a similar effect are mere mockeries and premiums given to secure trade. If indeed such a free examination involves more than a cursory glance to distinguish the invention from obviously unpatentable matter, it is an incomplete imitation of what a preliminary examination should be. The inventor generally receives notice that, "We find a few patents which are somewhat similar to yours, but as many of our clients have obtained patents by making some slight changes, we suggest that you may also be able to do this. You are of course aware that we have acted without conmpensation until now and we will send you copies of these patents upon receipt of $—." The one or two patent specifications sent are generally a small part of all the references which could be found, and are further sent without any explanation so that the inventor may understand the same.

The scheme attorney loudly condemns others who mislead gullible folk with free offers, bogus searches, certificates, guarantees, and the like. This makes it difficult to distinguish between good and bad attorneys.

If the prospective client does not respond at once, a second and a third batch of matter are sent. This matter is even more alluring and solicitous. The inventor is warned against delay, reminded of fortunes awaiting him, made to understand that the attorney can very likely sell his invention as soon as the application is entered in the Patent Office, that he probably has a purchaser just waiting for it (although he does not in fact even know what the invention is) etc.

Perhaps the worst feature of this literature is the everlasting lists of inventions wanted. Thousands of persons are undoubtedly misled by these lists which are for the most part a very good exposition of what not to invent. For example, one concern in particular has sent out the same list without changes for a number of years. We find wonderful statements about the possibilities in non-refillable bottles, nut-locks, rail joints, couplers, as well as numbers of other old devices. Some even go so far as to suggest that perpetual motion is not beyond possibility. One and all contain extravagant statements as to the great openings for simple improvements in common things, when in fact their greenest office boy knows that there are already thousands of patents for the very things that they ask for. They back up this part of their scheme with well known examples in which great fortunes have luckily resulted from the skilful exploitation of simple inventions. They neglect to mention that these cases are very few, that they are based upon broad patents, and that they are impossible of attainment by mere improvements, many of which are steps backward in the art instead of forward.

Another common practice is to make offers of prizes. Many of these prizes are myths and others are practically impossible of attainment. Then there are statements arranged to convey the impression that manufacturers are constantly writing for patents procured only through their concern, when in fact such letters if genuine are solicited and are mere statements that the companies will be pleased to examine any patents in their line. The offers of free advertising are another fallacy—a bare few words stating the subject of the patent and the owners name, without address and crowded with many others into a few inches of space. The truth of this matter is all too likely to be that only a scant per cent of their patents ever reach the commercial market and that a part of these require re-issues to make them of use.

There are even cases on record in which the scheme patent attorney has ventured to appeal his rejected cases in the face of probable defeat and at the client's expense. Another favorite scheme is to mislead the client in regard to fees. Contrary to a general belief, the charges of these concerns are for the most part no cheaper than those of reliable attorneys and in fact may be much higher. Their plan is to demand fees under various pretenses. They may needlessly complicate a simple device with extra drawings. In one case for instance, there were four sheets of drawings, a comparatively short specification and one sole and long winded claim. An examination into the bound volumes of drawings and specifications shows that the majority of the patents allowed these attorneys have but a single and puffed up claim. It is sometimes found that one of these patents could have been a basic patent if really protected, but it now serves as little more than a bothersome reference to future inventors through its narrow and weak claims. It amounts in fact, to a dedication of the idea to the public.

The inventor may expect but little aid from the Patent Office in protecting himself from such practices. The Office cannot refuse to pass an application to issue before it is fully protected. The register of attorneys, which might be thought to protect the inventor and aid him in an intelligent selection of an agents is rendered useless by the fact that it also carries the names of the scheme attorneys. The very magazines and newspapers to which the inventor looks for advice are loaded with the scheme attorneys' advertisements. Then the concerns are often incorporated so that the members escape personal responsibility. There is sometimes doubt as to the identity of the persons involved.

There is a wide movement directed to the prevention of all fraudulent advertising, and it is hoped that it will include that of scheme attorneys. There is also a special effort toward the regulation of the advertising of these attorneys.

At the present time it appears that the best thing to do is to strictly avoid all scheme attorneys, and if caught to send the particulars to the Commissioner of Patents or the postal authorities. If sufficient evidence is submitted there should be no possible escape for the scheme attorney in spite of his financial standing. The policy of the Patent Office was forcibly established in such matters about fifteen years ago, and it seems all that is needed now is conclusive evidence.

The Electric Salesman.

Passers-by in the street in New York where is located the office of a prominent typewriter company, are puzzled and mystified by the window exhibit. What appears to be an ordinary typewriter, mounted on an open front mahogany cabinet, is supported at the four corners by four heavy silken ropes suspended from two nickel plated tubes similar in shape to the davits of a boat. A strip of paper 8 inches wide passes from a a roll mounted on the back of the machine, around the roller and up over another roller in the back part of the window.

The machine clicks busily away, the printed matter setting forth the advantages of that particular typewriter, all without the aid of any visible human agency. A typist, however, seated at a machine in one of the offices is the operator. The silken ropes, it is explained in *Popular Electricity*, are silk covered wires twisted into that form. The cables are tied in a false knot, which appears to pass around the tube, but really passes through it, giving opportunity to establish electrical connections. The cabinet is full of electro-magnets, one for each key on the typewriter. The keys in the back of the store complete an electrical circuit when pressed, and send a current through the proper electro-magnets, thus depressing the corresponding keys on the typewriter in the window. Though the front of the cabinet seems open, mirrors mounted at certain angles reflect the bottom and make it appear like the back, in the manner familiar to those who understand the construction of magical boxes and such illusions. The magnets and operating mechanism are between the mirror and the real back.

Burning Coal Underground.

To abolish coal mining, and to do away at the same time with the smoke of the cities, is involved in a recent suggestion by the eminent scientist, Sir William Ramsay. He proposes that instead of mining coal, it should be left underground, where it should be burned, the heat being used to generate power which may be transmitted electrically to the points where it is to be used. The ideal state of things, he says, would be to have a gas retort in the bowls of the earth. Speaking before the International Smoke Abatement Society in London, he said:

"There is absolutely nothing, so far as I can see, to prevent a bore-hole from being put down until the coal stratum is reached, and concentric tubes being used to set the coal on fire by electricity, and to blow air down to enable the coal to burn as a preliminary operation. When sufficient heat has been generated, the amount of air sent down might be restricted. Coal with plenty of air gives off carbon dioxid. When half burned it gives what is called Dowson's gas, which is used for gas engines. If steam were blown in it would give a mixture of hydrogen and carbonic oxid, or water-gas, which also is frequently used for gas engines. Bring your gas engines to the mouth of your pit or bore hole, and produce your power there. You would thus have 30 per cent of the energy of the coal available as against 15 per cent available in fuel energies. That energy might be transformed into electricity at the mouth of the bore-hole, and you could distribute it through the country—wherever you liked. There is nothing new in this. Electricity has been carried 200 miles in California. In this way you would get electricity available for lighting and heating (including domestic heating), your railways would be worked by electricity, and the only fuel you would require would be oil for ships."

It is reported that a mine owner in England has offered Sir William the use of some coal strata to experiment with, and that his plan is to be tried out shortly. Although this experiment will be made on a relatively small scale, Sir William says that if it succeeds "a candle will be lighted in England which will not be extinguished in our time."

Some experts believe that there is danger of a gigantic explosion if the coal is burned underground, and regard the whole matter as playing with forces that cannot be controlled.

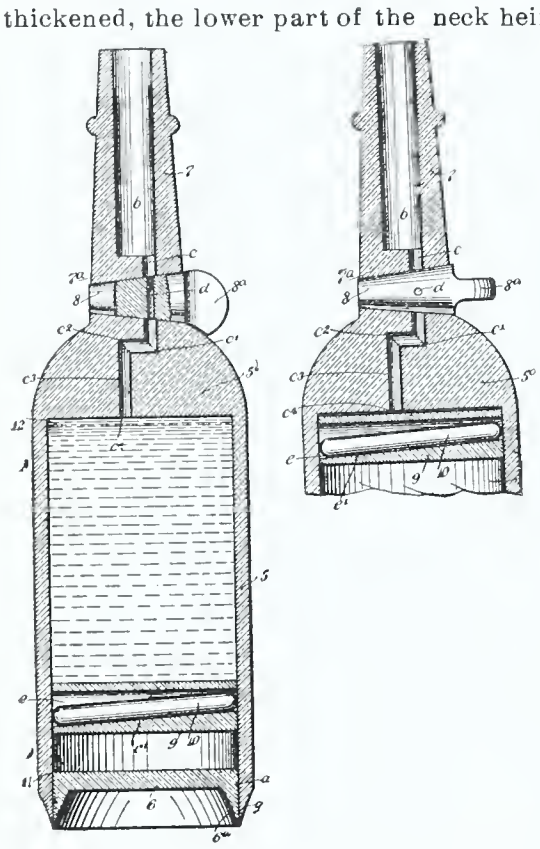
To keep themselves posted in the progress of the arts in which they are interested, inventors and manufacturers should subscribe for the INVENTIVE AGE, which publishes a list of all patents issued each month. The low subscription price and the character of the publication entitle it to the support of all the inventors of the country.

CLEVER NEW PATENTS.

NON REFILLABLE BOTTLE.—ELECTRIC HEATED GLOVE.—
ARCH SUPPORT.

Non-Refillable Bottle.

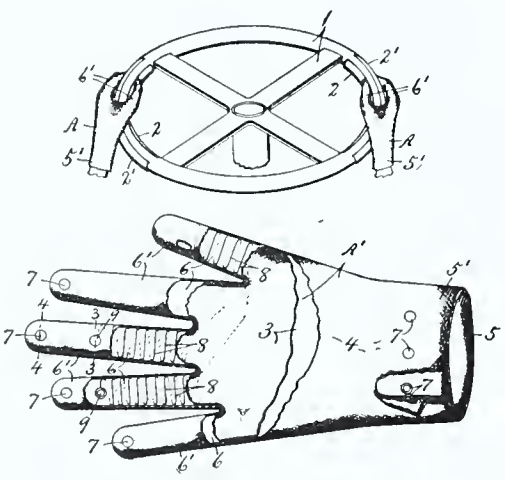
In few lines of industry has there been a greater demand than that by manufacturers of liquids, for a bottle that cannot be refilled with another product. A device for this purpose, which will seal the bottle against pressure if an effort is made to fill it with a force pump, has been patented by William White Clark, of Covington, Ga. The drawings show the bottle filled and also empty, with the parts adjusted to seal it. The body has an inner wall open at the lower end, with a flat bottom having a peripheral wall. The upper part is thickened, the lower part of the neck being a solid extension thereof. Above this part the neck has a central bore with a liquid receiving compartment, that also serves as a discharge for the liquid in the body. From the receiver *b* a tortuous passage *c* extends in the neck and body until it intersects the bore, as shown. A tapered opening in the neck crosses this passage, and is closed by the plug valve 8, in which is a similar passage *d*, axially alined with the passage *c*. A disk valve fits slidably in the bore of the body, and a tapered slot *e* is made transversely therein. A locking bar 10 fits in this slot and at its ends contacts with the bore when at rest.



When the bottle is being made, the disk valve is in the position shown in Fig. 1. The compartment 11 below the valve is filled with compressed air after the compartment 12 above it has been so filled. This prevents the valve from sliding up when the compartment 11 is being filled. The bottom 6 is then inserted in the lower end of the bottle. The air pressure in the compartment 11 is being filled. The bottom 6 is then inserted in the lower end of the bottle. The air pressure in the compartment 11 is enough to lift the disk valve and the heaviest known liquid which could be poured into the compartment 12. The air pressure in this compartment counterbalances the force exerted in the lower compartment. When the bottle is to be filled, the bottom is secured in the lower edge of the bottle by fusion. The disk valve is held as shown in Fig. 1 by the counterbalancing pressures in the compartments. The plug valve 8 is closed and the bore *b* in the neck filled with liquid. The operator puts his hand on the mouth of the bore, so making it air tight, and then turns the valve 8 to make the passages *c* and *d* register, so that the air will not escape faster than the liquid enters, for if it does, the disk valve will rise and close the bottle before it is full. The liquid descends into the body, the air simultaneously ascending and replacing the liquid in the bore. As the liquid is decanted, after the bottle is filled, the disk valve rises till finally it seals the lower end of the passage *c*, thus preventing refilling. The hends in the passage prevent the introduction of a wire to hold the valve open, so as to refill the bottle. When the valve ascends, the rod 10 rests on the bottom of the slot, but the moment the valve starts to descend, the upper wall of the slot bears on the rod and wedges it in the body.

Electric Heated Glove.

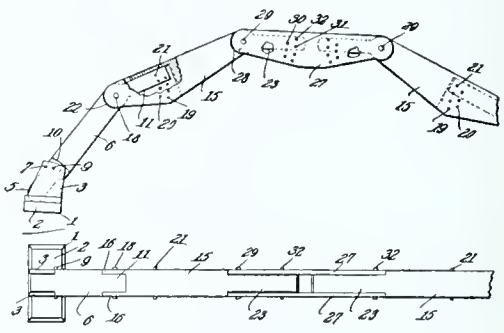
Many of the fatalities of flying have been due to loss of control of the airship on the part of the operator, because of numbed hands. All drivers of automobiles, motor boats, aeroplanes, and similar conveyances which are guided by hand steering devices, know how hampered they are from this cause. In cold atmospheres, when a high rate of speed is maintained, the hands often become frozen or chilled to such an extent as to make them incapable of properly manipulating the machine, thereby endangering life. A glove or mitten which may be worn with the same freedom of movement as any ordinary hand covering, and which may be electrically heated at will without removing the hands from the steering wheel, has been patented by Arthur L. Carron, of Binghamton, N. Y. The rim of the steering wheel has separate sets of electric conducting strips, one for each hand, the strips being insulated. The glove comprises inner and outer telescoping sections which may be detached if desired, both being provided with wrist portions and finger portions clasped together, the remaining hand portions forming the main body. Several parts of the inner section of the fingers are provided with electric heating coils, of German silver or other wire, incorporated in the fabric of which the glove is made, in such a manner as to follow the cross sectional contour of the fingers when the glove is slipped on, that is, the fingers are inserted through the coils. The inner and outer glove sections may be made of any suitable flexible material, the inner section of knit fabric and the outer of leather. The wire of the heating coils is wound round the fingers of the inner section and laced into the fabric thereof so as to keep the helices of the coils a fixed distance apart, and permit ample flexibility for free movement of the fingers. These coils are electrically connected to each other and to contact terminals, which consist of two parts constituting a clasp to fasten the glove sections together. The outer part thereof contacts with the conducting strips when the hands of the operator are in gripping position upon the steering



wheel. These conducting strips connect with a source of electric energy, so that when the gloved hands are in place the operator may move the contact terminals in and out of contact with said strips, closing or opening the electric circuit and permiting the heating of the coils at will without removing his hands from the wheel. If the hands become too warm, the fingers may be withdrawn to break the contact and placed on any other part of the wheel without any restrictions by wires. The contact terminals are normally free from electric connection when not volutarily brought into contact with the conducting strips, and the gloves may be taken off at will, like any ordinary hand covering.

Arch Support.

An arch support the contour of which may be varied at will, to permit of its use in the construction of arches of different contours, has been invented by Henry H. Frick, of Fricks, Pa. From the cuts, which show a fragmental side elevation and a top plan view, it will be seen that the skewbacks comprise a base with integral wings between which is seated the end of the lowermost voussoir 6. The thrust of this against the skewback is received in the seat of the same. Openings in the voussoir can be brought into alinement with openings 7 in the wings and secured by pins. It will be seen that the angle between the lower voussoir and the base may be altered, the relative positions being maintained by the securing pins. The lower voussoir is shouldered to receive the wings, and its opposite end is inclined at an angle. The upper voussoir, 15, is chambered in its lowered face and has wings between which the end of the lower voussoir may be inserted. Openings in the wings aline with openings in the voussoir 6, and through a pin in these openings, the two voussoirs may be pivoted. The voussoir is shouldered to receive the wings of the voussoir 15. In these wings, 16, are openings which aline with those of the lower voussoir and through which pins may be passed. By passing these pins through successive openings, the angle between the voussoirs may be changed. The keystone of the structure comprises



plates adapted to be applied to opposite sides of the ends of the upper voussoir. Openings in the plates aline with openings in the upper voussoir and pins may be passed through, so that the voussoirs are pivoted to the keystone, the ends extending toward each other between the plates 27. Openings and pins, as described, effect the angle between the voussoirs and the keystone. It will be seen that by successively mounting the securing pins in the several openings, the contour of the structure may be altered at will, and a single structure may be employed in arches of different spans, and of different rises.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

MYGATT v. M. SCHAUFFER-FLAUM CO.

Circuit Court of Appeals, Second Circuit. Nov. 13, 1911. 191 F. R. p. 836.)

1. PATENTS—INVENTION—DESIGN FOR LAMP REFLECTOR.

The Mygatt design patent, No. 37,983, for a design for a prismatic reflector for electric lights, is void for lack of invention, in view of desigu patent No. 37,967 to the same patentee.

2. PATENTS-INVENTION—DESIGNS.

To sustain a pateut, whether for a mechanical oonstruction or a design, it must appear that there was an exercise of the inventive facultics; and a mere change in construction, which shows no originality and adds no beauty to existing structures, is uot sufficient to sustain a patent for a desigu.

EDISON v. ALLIS-CHALMERS CO. et al.

(Circuit Court, W. D. New York. June 6, 1911. 191 F. R. p. 837.)

1. PATENTS—VALIDITY AND INFRINGEMENT —ROCK CRUSHER.

The Edison patents, Nos. 672,616 and 672,-617, for a method and apparatus for breaking rock by kinetic energy by means of two massive iron rolls having irregular surfaces and slipping power connection, by which they are independently rotated toward each other until they acquire a high momentum, the charges of rock being delivered at intervals and sledged, broken, and crushed by the knobs on the surfaces of the rolls, were not anticipated and disclose invention of high order and merit. Such patents also held valid against the claim of prior public use, and the method patent and claims 1, 2, 3, 4, and 7 of the apparatus patent infringed. Claims 5 and 6 held not infringed.

2. PATENTS — PRIOR PUBLIC USE—WHAT CONSTITUTES.

An experimental use of an uncompleted machine, even though third persons are permitted to witness its operation, is not a public use which will defeat a patent for the completed invention.

WALTHAM WATCH CO. v. KEENE.

(Circuit Court, S. D. New York. Nov. 3, 1911. 191 F. R. p. 855.)

PATENTS-INFRINGEMENT—RIGHT OF OWNER TO IMPOSE CONDITIONS ON PURCHASER OF PATENTED ARTICLE.

The owner of a patent covering certain improvements in an article manufactured by it in selling sueh articles to retail dealers may lawfully, by notice attached thereto, impose conditions upon the purchaser, including the fixing of the price at which they may be resold, and a purchaser who violates such condition is liable for infringement of the patent.

POPE AUTOMATIC MERCHANDISING CO. et al. v. McCRUMHOWELL CO.

(Circuit Court of Appeals, Seventh Circuit. July 27, 1911. 191 F. R. p. 979.)

TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—SIMILARITY IN APPEARANCE.

The manufacturer of an unpatented mechanical implement, who has selected unpainted aluminum as the most suitable material and has adopted the most simple, efficient, and economical form of construction in which the combination can probably be embodied, with nothing for embellishment or distinction, except a name plate, cannot charge a competitor with unfair competitiou, because, for the same utilitarian reasons, he uses the same construction in all respects, excepting as to the name-plate, which he makes distinctive, and no deception of purchasers is shown.

FAULTLESS RUBBER CO. v. STAR RUBBER CO.

(Circuit Court, N. D. Ohio, E. D. Oct. 23, 1911. 191 F. R. p. 982.)

PATENTS—ANTICIPATION-RUBBER NIPPLES.

The Miller patent, No. 926,011, for a nipple for use on nursing bottles, shows no practical or patentable improvement over those of the prior art, and is void for anticipation and lack of invention.

VICTOR TALKING MACH. CO. v. VITAPHONE CO.

(Circuit Court, S. D. New York. Nov. 13, 1911. 191 F. R. p. 987.)

1. PATENTS—INFRINGEMENT—GRAMOPHONE.

The Berliner patent, No. 534,543, for a gramophone, claims 5 aud 35, held infringed on motion for a preliminary injuuction.

2. PATENTS — INFRINGEMENT — MANUFACTURE OF INFRINGING DEVICE.

The manufacture of an infringing article is none the less an infringement because the patent has but a short time to run, and such article may uot be sold or used until after its expiration.

GOULD STORAGE BATTERY CO. v. ELECTRIC STORAGE BATTERY CO.

(Circuit Court of Appeals, Second Circuit. Nov. 13, 1911. 192 F. R. p. 28.)

1. PATENTS—NOVELTY—PRESUMPTION.

The presumption is that two patents granted to the same inventor do not cover the same iuvention, and the burden rests on one asserting the contrary to establish his contention by cogent proof, especially where the patents were issued within a month of each other on applications pending at the same time.

2. PATENTS—ASSIGNMENT—OPERATION.

A court cannot split up the title to a patent, and a complainant is not entitled to a decree requiring a patent to be trausferred to him, where it contains claims to which he has established no right, even though he may be entitled to the broad invention.

3. PATENTS—ASSIGNMENT—SECOND PATENT FOR SAME INVENTION.

Evidence held insufficient to establish that the Madden patent, No. 570,224, for a machiue for making grids for secondary battery plates, is for the same invention as patent No. 572,363, issued to the same inventor on a prior application, so that it passed by an assignment of the latter.

EXCELSIOR SUPPLY CO. et al. v. WEED CHAIN TIRE GRIP CO. et al.

(Circuit Court of Appeals, Seventh Circuit. July 27, 1911. Rehearing Deuied Oct. 5, 1911. 192 F. R. p. 35.)

1. PATENTS — VALIDITY AND INFRINGEMENT—CHAIN TIRE GRIP.

The Parsons patent, No. 723,299, for a chain tire grip, consisting of two metal rings or hoops, one on either side of the tire, of smaller diameter than the periphery of the wheel, and connected by transverse chains extending across the face of the tire, so loosely that the device is free to travel circumferentially around the wheel, is in such feature novel and discloses patentable invention, also held infringed.

2. PATENTS — INVENTION — ARRANGEMENT OR ADJUSTMENT.

Arrangement or adjustment of a deviee or its parts where it makes operative and practicable what was before inoperative and impractioable, and is not itself so obvious that its utilization is not of higher merit than the mechanic's skill, may be the basis of inventiou.

WOODMAN v. LYDIARD-PETERSON CO.

(Circuit Court, D. Minnesota, Fourth Division. Jan. 17, 1912. 192 F. R. p. 67.)

1. COPYRIGHTS—SUFFICIENCY OF NOTICE.

A copyrighted publication designated on the title page as "Woodman's Miunetonka May-Directory," which consists of a map, and also a directory with the name of the publisher printed on the map, and also the words "Copyright 1908," contains a sufficient notice to protect the copyright of the map.

2. COPYRIGHTS—VALIDITY—MAP.

A map is subject to copyright, although the material was obtained from prior publications not copyrighted, if it constitutes a new arrangement of such old material and also contains new and original features.

3. COPYRIGHTS—INFRINGEMENT—MAP.

Where every part of a map is copied from a copyrighted map, infringement is not avoided because certain features of the copyrighted map are omitted therefrom.

4. COPYRIGHTS—SUIT FOR INFRINGEMENT—DAMAGES—CONSTRUCTION OF STATUTE.

Copyright Act March 4, 1909, c. 320, § 25, 35 Stat. 1081 (U. S. Comp. St. Supp. 1909, p. 1297), which provides that in a suit for infringement the complainant may recover aetual damages and profits, or in lieu thereof such damages as to the court shall appear to be just, and that such damages shall not exceed the sum of $5,000 nor be less than the sum of $250, does not compel the court to award damages to the amount of $250, if in its opinion the actual damages do not amount to so much.

5. COPYRIGHTS— SUIT FOR INFRINGEMENT— DAMAGES.

That defendant gave away a certain number of copies of a map which infringed complainant's copyright does not create any presumption that complainant was thereby deprived of the same number of sales and entitle him to damages on that basis.

AMERICAN STREET FLUSHING MACH. CO. v. ST. LOUIS STREET FLUSHING MACH. CO et al.

(Circuit Court of Appeals, Eighth Circuit. Nov. 21, 1911. 192 F. R. p. 121.)

PATENTS — INFRINGEMENT — PROFITS RECOVERABLE—BURDEN OF PROOF.

In an accounting for profits made by an infringer of a patented device, which as used constituted but a small part of a large completed structure, the complainant has the burden of proof to show the profits realized by defendaut and ascribable to such particular device.

CLIMAX LOCK & VENTILATOR CO. v. AJAX HARDWARE MFG. CO. et al.

(Circuit Court W. D. New York. Oct. 6, 1911. 192 F. R. p. 126.)

1. PATENTS—SUIT FOR INFRINGEMENT—PLEADING.

Allegations, in a bill for infringement of a patent, that defendants had copied cuts of complainant's patented device in their catalogne with intent to deceive purchasers, held merely incidental to the charge of infringement, and not to state a separate cause of action for unfair competition.

2. PATENTS—JOINT INFRINGEMENT — ESTOPPEL TO DENY VALIDITY.

Corporations which are acting jointly with patentees who have assigned their patent in infringing the same are estopped equally with them to deny its validity.

3. PATENTS—SUIT FOR INFRINGEMENT—PLEADING

Where the infringement against the patentees and others shows such relation between the defendants as to affect all with the estoppel of the patentees to deny the validity of the patent, a specific allegation that all are so affected is not neccssary.

4. PATENTS—INFRINGEMENT—MAIL BOX.

The Rosenberg and Clark patent, No. 961,897, for a mail box, held infringed on a motion for preliminary injunction.

NATIONAL MFG. CO. v. SHARON HARDWARE MFG. CO.

(Circuit Court, W. D. Pennsylvania, Feb. 27, 1911. 192 F. R. p. 130.)

PATENTS—VALIDITY AND INFRINGEMENT—DOOR HANGER.

The Benson patent, No. 818,603 for a door hanger, while it must be given a narrow construction, discloses novelty and invention, and the device is one of utility, having the advantages of both a one-piece hanger and a hinged hanger. Also, held infringed.

ACME ACETYLENE APPLIANCE CO. et al. v. COMMERCIAL ACETYLENE CO. et al.

(Circuit Court of Appeals, Sixth Circuit. Dec. 5, 1911. 192 F. R. p. 321.)

1. PATENTS — VALIDITY —ABANDONMENT— METHOD AND APPARATUS APPLICATIONS.

A method and an apparatus for practicing such method are distinct things, and may be the subjects of separate inventions and covered by separate patents, and where separate applications are made for each by the same inventor his withdrawal or abandonment of one does not affect the validity of a patent granted for the other.

2. PATENTS — TERM — FOREIGN PATENT — ACETYLENE GAS TANKS.

The Claude aud Hess patent, No. 664,383, for an apparatus for storing ad distributing acetylene gas is not limited as to term by the British patent No. 29,750 of 1896, under Rev. St § 4887 (U. S. Comp. St. 1901. p. 3382), the foreign patent being for a method, and the two not for the same invention.

LONG v. NOYE MFG. CO.

(Circuit Court, W. D. New York. Sep. 13, 1911. On Application for Rehearing, Oct. 13, 1911. 192 F. R. p. 566.)

1. PATENTS—ERRORS IN PATENT OFFICE—POWER TO CORRECT.

The court in an infringement suit is without power to correct errors or mistakes that have been made in the Patent Office, either by the commissioner in erroneously considering patents cited by him as bearing in the prior art, or by the patentee's inadvertence in failing to cite attention thereto.

2. PATENTS — INFRINGEMENT — "CORRUGATIONS"

"Corrugations" called for in a patent do not necessarily possess the characteristics of regularity or symmetry.

3. WORDS AND PHRASES — "FLAT."

The word "flat" signifies something that is level, without rotundity, curvature, or other variation or irregularity.

4. PATENTS—INFRINGEMENT—ADDITIONS.

The addition of something to what is shown by a patent does not avoid infringement if the substance of the invention is taken and the principle or mode of the operation retained.

5. PATENTS—VALIDITY AND INFRINGEMENT —RADIATOR AND AUTOMOBILES.

The Long patent, No. 8[illegible]7, for a radiator for automobiles, discloses invention and is valid, but of narrow scope. Claims 1 and 2 held infringed, and claim 3 not infringed.

MAIL & EXPRESS CO. v. LIFE PUB. CO.

(Circuit Court of Appeals, Second Circuit. Jan. 8, 1912. 192 F. R. p. 899.)

1. COPYRIGHTS—STATUTE-CONSTRUCTION—COMPONENT PARTS.

Copyright Act March 4, 1909, c. 320, § 3, 35 Stat. 1076 (U. S. Comp. St. Supp. 1909, p. 1290), provides that the copyright provided for shall protect copyrightable component parts of the work copyrighted, and all matter therein, in which copyright is already subsisting, but without extending the duration or scope of such copyright, and that the copyright on composite works or periodicals shall give to the proprietor all the rights in respect thereto which he would have if each part were individually entitled under the act. Held, that a copyright on a periodical protects the pictures therein as component parts of the periodical.

2. COPYRIGHTS— INFRINGEMENT—DAMAGES —ASSESSMENT—"COURT"

Copyright Act March 4, 1909, c. 320, § 25, 35 Stat. 1081 (U. S. Comp. St. 1901, p. 1297), provides that an infringer of the copyright laws shall be liable to pay the proprietor such damages as he suffered by the infringement, as well as all profits which the infringer shall have made from such infringement, and in proving profits plaintiff shall be required to prove sales only, and the defendant every element of cost which he claims, or in lieu of actual damages and profits, such damages as to the court shall appear to be just, and in assessing such damages the court in its discretion may allow the amount thereinafter stated, but, in the case of a newspaper reproduction of a copyrighted photograph, such damages shall not exceed the sum of $200, nor be less than $50, and such damages in no other case shall exceed $5,000, nor be less than $250, and shall be regarded as a penalty. Held, that the statute, by using the word "court," did not require that the judge acting by himself should assess the damages when a case was presented calling for an award under the minimum damage clause, and that the court, under such circumstances, properly directed the jury that, if they found for plaintiff, they must award at least $250 for each infringement.

THADDEUS DAVIDS CO. v. DAVIDS et al.

(Circuit Court of Appeals, Second Circuit. Jan. 8, 1912. 192 F. R. p. 915.)

1. TRADE-MARKS AND TRADE-NAMES—REGISTERED TRADE-MARK—INFRINGEMENT.

Where one of the defendants was a lineal descendant of the original "Davids" who established complainant's business, such defendant was entitled to engage in the manufacture and sale of ink and use his own name in that business, notwithstanding complainant was previously engaged in selling inks under the "Davids" as a registered trade-mark

2. TRADE-MARKS AND TRADE-NAMES— USE OF INDIVIDUAL NAME—LIABILITIES.

Where one of the defendants, who was a lineal descendant of the origiual "Davids" who established complainant's business, was entitled to use his family name in his business, notwithstanding it had been registered by complainant, his use thereof at the top of a label placed on his goods, and the use by defendants of the name "Davids Manufacturing Company" on the bottom of their labels, was not an infringement of complainant's registered trade-mark "Davids."

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Ummo F. Luebben, Lincoln, Neb., inventor; Ummo Round Baler Company, assignee, of the same place. Baling Press.—The object of this invention is to provide a portable machine, designed for operating on all kinds of fibrous materials, such as hay, straw, etc., which machine is capable of rapidly and efficiently forming a round bale of such material, whereby a saving of the product is effected. To this end a press is provided having means operable by the expansion of the bale under formation for automatically opening the bale-forming mechanism to discharge the bale therefrom when the same has reached a predetermined size. Means are also provided for controlling the return of the elements or members of the bale-forming mechanism to their initial position after a bale has been completed and discharged from the press, whereby the belts or bands of the baling mechanism will be prevented from becoming displaced or tangled by a too sudden or abrupt return of the parts. The machine also embodies an efficient friction device adapted to apply friction to the bale-forming mechanism during the formation of a bale to regulate and render uniform the density thereof, such friction device serving to automatically relieve the bale forming mechanism of friction during the return of the parts to their initial position. As the patent contains over ninety claims, the invention is fully covered. It is now being exploited by the assignee with every prospect of material success.

Edwin Firth, Attleboro, Mass. Clothes Wringer.—This invention relates to a clothes wringer of that type in which the rollers are driven by intermeshing gears which do not materially vary their position with the rollers as they spread apart or move together under the varying thicknesses of the article passed between the rollers. The invention consists of a frame, a rigid roller mounted in fixed bearings therein, a tubular roller mounted in the frame above the first-mentioned roller and in contact therewith, said tubular roller being adapted to move vertically within the frame, yielding means for holding the tubular roller against the lower roller, a fixed member disposed diametrically in the tubular roller at one end thereof, a shaft within said roller having one end projecting through the frame and its opposite end bifurcated and loosely spanning the diametrically disposed member, and driving gearing engaging the projecting end of the shaft and connecting the same with the lower roller.

Paris R. Hinkle, Los Angeles, Cal. Nut Lock. Two patents.—The first patent relates to an improvement in nut locks adapted to be readily applied to an ordinary bolt and nut without necessitating any alteration in the construction thereof, and capable of preventing the nut from accidentally unscrewing when subjected to the vibration and rattling incident to its use on rail joints, machinery and the like. The invention consists of a substantially U-shaped plate having its two legs provided with alined threaded openings so as to screw upon a bolt, the bend of the plate being arranged at an inclination, a disk adapted to be inserted within the legs of the plate and fit between the said bend and the bolt, said disk being of a diameter greater than the distance between said bend and said bolt, whereby it is caused to contact with both parts, and a flexible metallic strip doubled upon itself to form a loop and serving to support the disk, the free ends of the strip being adapted to be bent over the edge of the plate for holding the disk in its operative position.

The second patent aims to construct the nut lock from sheet metal, which when applied to a bolt will engage the same so as to be easily turned home against the nut, and which will be equipped with simple means whereby rotation of the bolt, after the lock is applied, will serve to firmly bind the lock in place, so that the loss of the nut cannot occur. The lock consists of resilient members engaging the threads of the bolt, a tongue connecting the said members, a locking lever pivotally mounted between the said members and having an eccentric head adapted to bear against the bolt adjacent its pivotal connection with the resilient members, the free end of the lever being adapted to engage and be held by the said tongue.

Alexander McCombie, Grass Valley, Cal. Four patents.—The first patent relates to an ore feeder for use in connection with stamp mills and the like. The principal object is to provide a novel, simple and practicable structure, with which an effective feed screw is employed, that will properly feed the material either in a wet or dry state, and will also pass small pieces of quartz, which heretofore have occasioned great trouble by clogging the feed mechanism. The invention consists in the combination with a battery frame, of ears secured thereto, feeding mechanism including a conduit or spout and a feed screw contained therein, and angularly disposed sets of arms secured to the conduit or spout, the arms of each set being divergently disposed, said arms and said ears being provided one with sockets and the other with pins that detachably engage in the sockets, whereby the feeder can be mounted directly on the frame of a stamp battery, is readily detachable therefrom, and may be easily dismembered for the purpose of inspection and repair.

The second invention relates to a sectional fruit picking step ladder. The object of the invention is to provide a sectional step ladder composed of a plurality of step ladders adjustable in unison and equipped with adjustable base members adapted to conform to inequalities of the ground and capable of rigidly supporting the extension step ladder in the vertical position and positively holding it in either hard or soft ground. The construction is such that the upper step ladder section may be removed to permit the lower step ladder section to be used independently of the former when desired. Means are also provided for enabling the picked fruit to be readily lowered and automatically dumped onto the ground or into a receptacle without necessitating the picker descending from the upper portion of the ladder, whereby the operator may remain in such position until he has gathered all the fruit within his reach.

The third invention relates to rotatable hydraulic nozzles for stand pipes, water towers, or like structures in which a nozzle is connected to and movable with relation to the feed pipe. The object of the invention is to provide a nozzle which is connected to the feed pipe or stand pipe by a universal joint, so as to allow the nozzle to have a movement of rotation around the axis of the feed pipe, and an independent rotating movement in a plane at right angles to the plane of the first rotation. This allows the nozzle to be directed to any quarter desired and to be elevated to any degree vertically and directed to any point of a circle horizontally. In this way the nozzle has a complete rotary movement in any direction, there being no obstruction with which it will contact in its movement around a complete circle.

The fourth invention relates to a shoe and glove fastening. The object is to provide a novel fastening device which will effectively hold together the parts of the glove, shoe or the like, and which can be easily opened and closed. The fastener can be made in a variety of forms. The more elaborate form consists of a pivoted connecting bar having a pivoted hook-carrying member arranged to engage eyes or equivalent devices on one part of the article to be fastened, in connection with an ornamental monogram cap covering the aforesaid parts, so as to provide an ornament of pleasing effect, there being a pad having a marginal roll or border extending around the cap for preventing lace trimmings and other parts of garments from being caught by the cap.

Olaus B. Jacobs, Cleveland, Okla. Three patents.—The first patent relates to a rotary engine, and more particularly to that class of rotary engines in which an outer cylinder-carrying piston blade rotates around a central fixed shaft. One object of the invention is to provide such a rotary engine in which the outer revoluble piston casing shall relatively rotate eccentrically to the inner shaft, thereby providing a fixed abutment against which the motive fluid used shall act, and a means for forcing the exhausted motive fluid out of the piston space, and when gasoline or oil is used for drawing in the charge, compressing it, and afterwards forcing out the burnt vapors after the explosion. A further object of the invention is to provide a rotary engine in which the outer revoluble piston-carrying casing, surrounding a fixed eccentrically set tubular member, may be divided laterally into two portions or chambers, and the engine then be capable of use with steam expansively, or used as an explosion engine, one of said chambers in the latter case being used as a compression chamber and the other as an expansion chamber. In connection with the peculiar type of engine, the inventor has provided means for reversing the movement, or stopping it entirely, and has also devised a system of cooling the cylinder walls thereof and feeding fluid thereto when used as an explosion engine.

The second invention relates to means for cooling the type of explosion engine above described. To this end there is provided a circulatory system for the cooling medium which will maintain all of the parts of the engine at a sufficiently low temperature, said system being so arranged that it will not interfere with the various mechanisms of the engine. Mechanism is provided in which centrifugal force is brought into play to effect the circulation of the cooling medium through the system.

The third patent relates to means for feeding fuel to rotary explosive engines. The object of this invention is to utilize the fuel as a cooling agent for the engine, thus lowering the temperature of the latter while raising the temperature of the fuel, the mechanism being, however, such that water may be employed as a cooling agent, if desired. Another object is to provide a novel mechanism for highly heating the liquid hydrocarbon before carburetting and introducing the same into the engine, the said means being associated with the exhaust of the engine and including mechanism by which said exhaust may be cut off from the heating means. A still further object is to provide variable means of an automatic nature for controlling the pressure of the motive fuel supply. Among other features, the invention consists of an explosive engine having passages in its heated parts, a water supply pipe and a fuel supply pipe connected with the admission end of said passages, valves for controlling said pipes, means for directing fuel from the passages to the compression chamber of the engine, said means including a heater, and means for discharging water from the passages and excluding it from the heating mechanism.

William A. Klausman, St. Marys, Pa. Combined Foot Rest and Shoe Cleaning Stand.—This is a simple article designed for household use, combining a foot rest and a shoe cleaning stand, the construction being such that the device may be quickly and easily adapted for either use. The invention consists of a cabinet or hollow body having a reversible top, on one face of which is securely mounted a block, shaped to receive the sole and heel of a shoe, while the other face of the top is formed with a cushion. Folding supports connect the top with the hollow body, so as to permit the top to be shifted from one position to the other without any loss of time. The device furnishes a convenient and useful article for the purposes intended, and one which will be both ornamental and useful.

Joseph O. Beazley, Baltimore, Md. Combined Mop and Scrubbing Brush.—The object of this invention is to provide a simple and efficient device which will enable the operation of wringing a mop cloth to be performed with greater ease and facility than heretofore, the device being equipped with means for arranging a scrubbing brush either longitudinally or transversely, so as to permit the brush to be used either for ordinary scrubbing or for scrubbing in corners and similar places. The device is intended to use a mop cloth in the form of a band which is stretched to provide a cloth of two thicknesses. The clamping jaw for the brush is adjustable to accord with the size of the brush. The wringer works like a clock with a ratchet movement, which gives the operator great power in wringing the cloth.

August Kaspar, Shiner, Texas. Wire Twisting Implement.—The object of this invention is to provide a tool of simple construction for use in the manufacture of woven wire baskets. To this end there is provided an elongated tubular handle, a spirally twisted shank adapted when retracted to have its twisted portion entirely housed in said handle, rollers mounted on pins secured within the wall of the handle to engage the spirally twisted shank, stops provided on the end of the shank, and a socket member made fast to the end of the shank, said socket member carrying a twisting bit. By this construction the shank carrying the twisting bit has imparted thereto a rotary motion by the longitudinal movement of the handle.

Manning L. Nix, Oklahoma City, Okla. Cotton Planter.—The object of this invention is to provide a simple, inexpensive and efficient machine designed especially for barring cotton or for throwing the soil away from a row of cotton plants preparatory to cultivation. To this end the machine is equipped with a pivot support arranged to swing upward and downward and provided with soil engaging plows which are adapted through their engagement with the soil to maintain the pivot support in its lowered position and to prevent the same from swinging upwardly, thereby obviating the necessity of employing locking devices for holding the machine to the ground.

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FOR SALE—U. S. Patent No. 1,020,052. Fly Trap. Outright, state right or on royalty. If interested address Hans Passig, R. R. No. 2, Box 39, Lake Benton, Minn. aug

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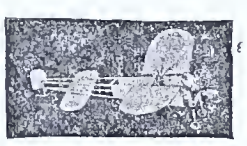
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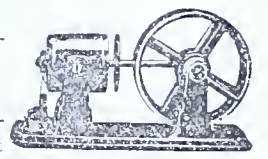
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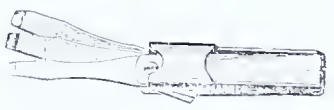


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THE OLDFIELD PATENT BILL.

I. COMPULSORY LICENSE AFTER FOUR YEARS.

The bill introduced by Chairman Oldfield of the House Committee on Patents is regarded on the one hand as "unduly radical and even dangerous, tending on the whole toward serious injury to an established and fairly satisfactory system rather than toward the installation of an appreciably better system," and on the other hand as "in the interest of inventors, of consumers and of the public policy of preventing dangerous monopolies." It has its advocates and its opponents. The hearings before the House Committee on Patents have been well attended and productive of much conflicting testimony. No report has yet been submitted and none is expected at this session. It is too important and comprehensive a matter to be rushed through Congress, and it is not believed that it will be. That some important legislation will result from the agitation there is no question.

It is impossible to consider all the different provisions of this bill in one article, and we propose in a series of articles to discuss the various propositions contained therein, expressing our approval of such as we think should be approved and condemning those which we think are unwise or unnecessary. The provision of the bill which is most antagonized is a part of Section 17, reading as follows:—

If at any time during the term of the patent, except the first four years, the patented invention shall not be manufactured, or the patented process carried on within the United States, its Territories, or possessions aforesaid to an adequate extent by the owner thereof, or by those authorized by him, then any person demanding it shall be entitled to a license from the owner of the patent to manufacture the invention or to carry on the patented process, unless the owner shall show sufficient cause for such inaction. Upon the refusal of such a license by the owner of the patent, the person seeking such license may apply to the district court, in the district wherein the owner has a residence or an established place of business, to compel the granting of such license. The court shall thereupon hear the person applying for said license and the owner of the patent, and, if the court is satisfied that the reasonable requirements of the public in reference to the invention have not been satisfied by reason of the neglect or the refusal of the patentee, his legal representives, or those authorized by him to make, use, or vend the invention, or to grant licenses to others on reasonable terms to make, use, or vend the same, said court shall issue an order requiring the owner of the patent to grant a license to the person applying therefor in such form and upon such terms as to the duration of the license, the amount of royalties, security for payment, the period within which the patented invention shall be manufactured or the patented process carried on, and otherwise as the court, having regard to the nature of the invention and the circumstances of the case, deems just.

From the order of the district court granting or refusing to grant such a license, appeal may be taken (by the party aggrieved) to the circuit court of appeals in the same manner and form as in other cases arising under the patent laws:—

Provided: That the citizens of any country which by treaty, convention, or law provides that the manufacture of the patented invention or the carrying on of the patented process in the United States shall be equivalent to the manufacture or the carrying on of the process in such country will be considered to have sufficiently complied with the requirements of this section if the invention is manufactured in said country within the period heretofore mentioned.

In effect this provision of the law permits any person to demand from the owner of the patent a license to manufacture the invention or to carry on the patented process, if the product of the invention shall not be manufactured or the patented process carried on within the United States, its Territories or possessions, to an adequate extent by the owner thereof within four years following the grant of the patent. This may appear reasonable on its face, but it would, in our opinion, affect very materially the value of patents. While many foreign countries have the compulsory license provisions as a part of their patent laws, it has always been a well-recognized and liberal feature of the United States patent law that an inventor, upon the issuance of his patent, could work it or not has he saw fit. In other words, the law gave him the exclusive monopoly of the right to make, the right to use and the right to sell the invention, and if he saw fit to withhold the invention from the public during the life of the patent, that was his own lookout. There are many things patented simply for the purpose of preventing them from being put upon the market. If a patentee can be compelled to grant the use of his invention to a competitor by any scheme of compulsory license, then the patent monopoly no longer exists, and the value of the patent is depreciated.

II. COMPULSORY LICENSE GRANTED TO PATENTEES OF IMPROVEMENT PATENTS.

A further provision of the same section bears upon the grant to the patentee of an improvement of a license from the holder of the original patent which may be infringed by the former, and is as follows:

If at any time during the life of a patent, a material and substantial improvement shall be patented, the manufacture of which would be an infringement of the original patent, the owner of the improvement patent may apply to the district court in the district wherein the owner of the original patent has a residence or an established place of business to compel the granting of such a license as will enable the improvement to be manufactured. The court shall thereupon hear the respective parties, and if the court is satisfied that the improvement is of such a material and substantial nature that the reasonable requirements of the public demand that it should be manufactured and sold, the court shall issue an order requiring the owner of the original patent to grant a license to the owner of the improvement patent in such form and upon such terms as to the duration of the license, the amount of royalties, security for payment, the period within which the patented invention shall be manufactured or the patented process carried on, and otherwise, as the court, having regard to the nature of the original invention and improvement and the circumstances of the case, deems it just.

From the order of the district court granting or refusing such a license appeal may be taken by the party aggrieved to the circuit court of appeals in the same manner and form as in other cases arising under the patent laws.

Under the present law if a patent is taken out on an improvement, which is an infringement of a prior patent, the owner of the original patent could prevent the owner of the improvement patent from manufacturing the improvement, while on the other hand the owner of the improvement patent could prevent the owner of the original patent from manufacturing the improvement. Thus neither the original patentee nor the patentee of the improvement is permitted to manufacture the improvement, and in some instances this provision has resulted in the stagnation of certain arts.

Both of these provisions of the law strike at the monopoly grant conferred by the patent, though it cannot be denied that the public would benefit in the end. If a patentee is required to license the owner of an improvement patent, or if he is required to license within four years from the grant of his patent, any one who seeks the license privilege, and who claims and shows that the patentee is not adequately filling the wants of the public in the manufacture of the invention, then assuredly the patent monopoly is done away with and the patentee's rights are materially abridged and limited to a degree which may affect the value of his patent. The question has been raised as to whether provisions of this character, if incorporated in law, would be constitutional. The patentee would no longer have a patent, which would afford him the *exclusive* right to his invention or discovery. It would hardly be considered an *exclusive* right if he is compelled to grant a license to the owner of an improvement patent, or if he is compelled to grant a license to any one who applies for the same upon furnishing evidence that "the reasonable requirements of the public have not been satisfied by the patentee." There are those who think that the patent monopoly should be curtailed, having reached this conclusion through reading the matter appearing in the daily press since the decision of the U. S. Supreme Court in Henry vs. Dick, which was discussed in our issue for the month of April. It is, however, a far-cry from the absolute monopoly sustained by that decision, and the practice that would be opened up were this proposed law enacted.

Many believe that the lowering of the bars in the slightest respect by taking away any of the *exclusive* rights of the patentee, would not only be unconstitutional, but would decrease the value of a patent very materially. There is much that can be said on both sides of this question. The solution of this difficult problem should be left to a commission of disinterested patent experts, including lawyers, judges and inventors to be appointed by the President, as suggested in the July issue of the AGE.

OATH OF INVENTORSHIP IN PATENT APPLICATIONS.

SOLE AND JOINT INVENTORS.

It is not an unusual thing for an inventor to join his partner or assignee with him by incorporating his name in the patent as one of the joint applicants or inventors. This is usually done under a misapprehension of the law, though instances have occurred where inventors have deliberately joined their partners with them as joint inventors merely for the purpose of saving an assignment fee. In other words they were willing to jeopardize the validity of a patent for a few dollars, and that is precisely what an inventor does when he associates his partner with him in the application as a joint inventor. There is only one right way of having the interest of the partner or assignee protected, and that is by an assignment executed by the inventor and recorded in the United States Patent Office. If the assignment is filed contemporaneously with the filing of the application, or before the payment of the final government fee, and it contains a request that the patent be issued to the inventor and assignee, then the patent will so issue, and the rights of both parties will be fully protected and the names of the inventor and assignee will appear on the patent as joint *patentees*, but not as joint *inventors*. An inventor should never permit his assignee or partner to claim association with him as a joint *inventor*. It is not necessary that this should be done for the protection of the assignee's interest, as the latter can always obtain full protection by an assignment. The inclusion of the assignee's or partner's name as an inventor along with the true inventor places in peril the entire patent. Should an interference arise in the Patent Office, making it necessary for the alleged joint inventors to establish their rights, it would develop in the taking of testimony that the inventors were not joint inventors,

and their standing in the interference proceeding would be subordinated to that of a later inventor.

Should, however, the application finally eventuate in a patent wherein the inventor and his assignee had claimed themselves to be joint inventors, the patent would always be open to attack on that ground. There have been a number of cases before the courts in which the patents were declared invalid because the patentees were not joint inventors. Indeed, the courts have gone so far as to hold that "a patent to joint patentees is invalid if it included an improvement made by one of them without concurrence and assistance from the other and without his knowledge."

Joint invention is often a very difficult question to decide, and it is a safe rule to avoid including two parties as joint inventors where it is possible to do otherwise. Of course, it is realized that to constitute two persons joint inventors, it is not necessary that exactly the same idea should have occurred to each at the same time, and that they should work out together the embodiment of this idea in a perfect machine. Such a coninicidence of ideas would scarcely ever occur to two persons at the same time. If an idea is suggested to one, and he even goes so far as to construct a machine, embodying this idea, but it is not a complete working machine, and another person takes hold of it, and by the joint labors of the two persons, one suggesting one thing or element, and the other suggesting another thing or element, a perfect machine is made, it is proper under such circumstances to have a joint patent issued to them. If, upon the other hand, one person invents a distinct part of a machine, as for instance the folding mechanism of a printing press, and another person invents another distinct and independent part of the same machine. namely the feeding mechanism, then each should obtain a patent for his own invention. That is to say, joint invention is not produced by associating two different improvements on the same machine in one patent. It should conclusively appear that each person claiming to be one of the inventors of the machine or device, contributed by suggestions of ideas to the production of the *whole* machine in its complete operable form. We have known of instances where inventors have associated model makers or their partners with them as joint inventors merely because the model maker or partner suggested a few ideas of non-patentable significance or importance. Of course, in such case, the patents granted thereon were invalid.

Every applicant for a patent must make oath that he is the first and *sole* inventor of the invention described and claimed in the application for patent. If there are two applicants, they must make oath that they are the first and *joint* inventors of the invention described and claimed. It has always been understood that falsely swearing to sole or joint inventorship would subject the affiant to the charge of perjury, but it has been decided otherwise by the Court of Appeals for the Ninth Circuit. In effect their decision held:

First. That the law holds that the crime of perjury can only be sustained precisely as the statutes define and declare.

Second. That Section 4892 of the Revised Statutes declares that an applicant for patent shall make oath that he verily believes himself to be the original and first inventor or discoverer of the improvement claimed and disclosed in his application.

Third. That the statute does not require that he shall swear that he is the original, first and *sole* inventor of such improvement.

Fourth. That the Patent Office in requiring an applicant or applicants to swear that he is the original, first and *sole* inventor, or they are the original, first and *joint* inventors of the invention described in the application, compels the applicant or applicants to take an oath which the statute does not call for.

It follows, therefore, that the charge of perjury cannot be laid against an applicant for patent who swears that he is the original, first and *sole* inventor, or one of the original, first and joint *inventors*, simply because the applicant takes an oath which the statute does not require him to execute, and, therefore, such execution of the oath is not perjury under the law.

Until the statute is changed so as to require an applicant to make oath that he is the original, first and sole inventor, or one of the original, first and joint inventors of the invention disclosed and claimed in the application, an applicant for patent cannot be charged with perjury by falsely swearing to either of such allegations. Nevertheless because of the penalties involved in having his application defeated in an interference proceeding, or having the patent declared invalid by the courts, it behooves the inventor to use great care in the execution of the oath accompanying his application for patent, and he should never permit his assignee or partner to be associated in the application *as joint inventor* without laying all the facts before his attorney and securing the latter's opinion as to the wisdom of the step. He should act only under the attorney's advice in such matters.

It would be most unwise to jeopardize the validity of the patent to save an assignment fee or satisfy the whim of a partner.

Protecting Ears From Shock.

Many people wonder how the sailors on board of warships can stand the shock produced by the discharge of heavy artillery. The men within the turret are not as much affected as those on deck, because the gun discharges outside; but in any case protection is necessary. To save the ear-drums from destruction celluloid pieces are employed, shaped something like an anchor with a ball at the end, this fitting in the ear opening. The device is formed with a bore which turns at an angle to the ball, and it is through this bore that sound waves are permitted to travel to the ear. The ordinary vibrations produced in speech are so small that they pass unhampered through the bore, but the large sound waves produced by the firing of big guns are impeded, so that no pain or injury is caused when they finally do reach the ear drum.

Machine for Checking up Accounts.

Uncle Sam has devised a new method whereby a closer check can be kept on the accounts and vouchers of his 52,000 postmasters. The antiquated system of auditing these accounts which was established by law shortly after the Civil War, will soon be displaced by machines with almost human intelligence. These machines, which are described in *Popular Mechanics*, comprise a key-card punch, a tabulating machine. and a sorting device.

Heretofore the assorting of money orders has been done by hand, and the work of auditing a postmaster's account delayed until almost a year after it was filed in the department. Under the new system all accounts can be adjusted within one week after being filed.

Few people realize what a tremendous task it is to assort and audit the money orders issued annually in the United States. When the little blue slips of paper disappear through the postoffice windows they enter upon 12 months of activity and 28 months of repose in a file room before they are finally macerated out of existence. Last year nearly 100,000,000 money orders were taken in by by postmasters in exchange for more than $600,000,000.

The first step in the new mechanical auditing is the designation of money order postoffices by little red numbers which now appear in the upper left hand corner of the orders. Instead of arranging paid money orders alphabetically by states and offices of issue and entering data on money order statements as at present, postmasters will hereafter be instructed to transmit the vouchers in the order of their payment, accompanied by adding machine lists, numbered consecutively, of not more than 50 orders, giving office numbers and amounts.

A tabulating card has been prepared which is divided into sections, each section containing symbols representing such facts and figures on the paid money orders as are needed in that audit. Upon receipt of the auditor of the lists and paid vouchers, a key-punch machine will be used to cut out the symbols which stand for the postoffice number, the amount, etc. These cards are placed on file as substitutes for the original vouchers. These cards, representing money orders paid at a postoffice in a day, week or month, will be run through tabulating machines, each office separately, and the totals reached compared with the totals reported on the postmaster's adding-machine lists.

As the comparisons are completed, the cards will be run through sorting machines and arranged numerically by office of issue. When so arranged the cards will be examined for missing numbers. Lists of orders issued by postmasters will be referred to, and the particulars of the missing orders punched on substitute cards. All of the cards, representing all money orders issued at a postoffice in a given period, will be run through the tabulating machine to arrive at the totals. The totals for each office will be compared with the amount of money orders issued as reported by postmasters. To find the number and amount of outstanding orders at the end of a year, the substitute cards will be run through tabulating machines.

Altogether there will be 290 of the new machines installed. All other accounts of the Postoffice Department, including the postal savings-bank system, are to be audited in future by these mechanical devices. This change in the method of auditing will, it is estimated, result in a saving of fully half a million dollars annually.

Harnessing the Father of Waters.

The greatest power dam in the world is being built in the Mississippi, in the most violent stretch of the great river and at the foot of its impassable rapids. This will create the largest water power plant in existence, and will energize an electric installation so important that when it is completed next year it is expected that it will shift the manufacturing center of the United States. The new power is being developed at Keokok, Iowa, and 225,000 kilowatts, or the equivalent of 300,000 horse power, will be created. At the same time there will be insured deep water navigation for 65 miles of the Mississippi at a place so difficult that a canal is now necessary. These things are done by a dam which, with its appurtenances, is the longest monolith in the world, with a length of 9096 feet. The lock provided for steamers to pass the dam is greater than any one lock in the Panama Canal, having the same width and a lift of 40 feet, compared with 32 feet on the Isthmus. The Keokok lock is 400 feet long, and there is also a large government drydock. All these structures are of monolithic concrete, and they involve several unparallelled engineering features.

The power house has an output slightly over half that generated by all the companies on both sides of the river, at Niagara Falls. It will be used within a zone of 150 miles from Keokok. St. Louis, 135 miles away in an air line, has contracted for 60,000 horse power for 99 years. The current will be taken there by a transmission line carrying 110,000 volts, the highest electric pressure ever used to transmit power.

Analysis of water power developments in various parts of the world shows that as a rule, the population within the zone of use of the power rises to five times the horse power developed. Applying that factor to the present location, and remembering that it is hoped to sell the power to factories, and subtracting the power sold to St. Louis, gives 1,200,000 as the population to be added to the vicinity of the big dam. So far reaching will be the effects of this installation, that it is believed that the map of industrialism in this country will be changed by it.

A CLASSIFIED list of Patents issued during the month appears in each issue of the INVENTIVE AGE. This keeps inventors and manufacturers posted in the art in which they are most interested.—We will send. postpaid, to any address, printed copies of any U. S. patent, with specifications and drawings, upon receipt of 10 cents per copy.—Please give correct data in ordering.—Address,

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Elevator safety device.....M. Nesztor
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Fastening inserting or other machines, Work support mechanism for.....L. A. Casgrain
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Fire box, Downdraft..S. M. Vauclain et al.
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Furnace for sintering metallic filaments for electric incandescent lamps.....C. Trenzen et al.
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Fuse, Electric.....G. W. Christians
Fnse, Safety.....H. A. Yates
Galvanic battery.....A. Heil
Game.....R. Kaerschke
Game apparatus.....J. D. Hirsch
Game table.....R. Hockin
Garbage can holder.....A. D. Gatchel
Garbage pail holder.....J. H. Farling
Garment, Burial.....C. C. Holcomb
Garment receptacle (2 pats.).....W. S. Gilmore
Gas, Collection or fume, flue dust, and other matter suspended in..K. F. Pearce
Gas, Device for controlling from a distance the passage of..A. M. and J. M. Aubert
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Gas generator, Acetylene.....F. H. Yonng
Gas heater.....L. F. Betts
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Gearing.....E. W. Blum
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Gravity carrier.....F. E. Moore
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Hair, Apparatus for shampooing ladies'.....W. Fearber
Hammer, Pneumatic E. C. Meissner
Harness attachment.....C. M. Green
Harrow and pulverizer, Combined.....C. Sjoman
Harvester, Marine.....R. Brooks
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Issued June 11, 1912.

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Car, Dump.....F. W. Hubbard
Car replacer.....W. H. Morris et al.

Car floor support and bolster, Hopper....A. Becker
Car structure....V. M Summa
Car underframe....R. E. Frame
Cars, Pneumatic cut off for dump....J. M. Wilcox
Carbonating and dispensing apparatus, Liquid....G. L. Kennedy
Carbonator....A. E. Shattuck
Carbureter adjusting device....H. S. Echternach
Carline....W. Miller
Cart, Can....P. E. Boyum
Cart, Hand....S. B. Hazard
Caster, Furniture....C. F. Lann
Casting apparatus, Pneumatic....S. P., Jr., and J. P. Wetherill, Jr.
Casualty indicator....A. M. Mitchell
Catalogue....C. F. Beezly, Jr.
Cellulose or solutions of the same into stable plastic solutions, Transforming formyl esters of....E. Bronnert
Centering tool....C. Blomstrom
Centering tool and punch....G. T. Mays
Centrifugal machines, Combined conveyer and scraper for....B. D. Coppage
Chain, Carrier....G. S. Witham, Jr.
Chain, Drive....C. J. Luther
Channeling machine....J. G. Ross
Chart, Tariff....J. H. Robinson
Chimney cap....A. F. Lieske
Chimney top or ventilator....J. L. Phillips
Chocolate coating machines, Flooding device for....T. G. Hollis et al.
Cigar and cigarette holders, Machine for making....G. Wirth
Cigarette box....I. R. W. Menger
Cigarette machine....S. Palmowsky
Clamps, Self adjusting clamp bar for door and furniture....F. Welker
Clock, Alarm....P. Lux
Clock for roving or spinning machinery or the like....A. Rankeillor
Closure retaining device....C. Calver
Clothing to flats, Machinery for attaching....C. Mills
Clutch, Friction....G. W. Shaffer
Clutch mechanism for gang plow lifters....F. J. Bradberry
Collin fastener....C. H. Hiser
Coin controlled lock....G. G. F. Boswell
Comb embossing and cutting dies....J. E. Burghoff et al.
Comber, Heilmann (2 pats.)....H. Jarry
Combination chair....L. M. Peterson
Combination or keyless lock....O. M. Farrand
Combustion, Appliance for smokeless....A. B. Reck
Composing machine....C. G. Pritchard
Compound....A. M. Bailey
Concrete beams, Apparatus for molding....E. Bianchi
Concrete beams, Carriage for transporting and laying....R. A. Reynolds et al.
Concrete mixing machine....D. B. Hoover
Condensers, Regulating resistance for electrolytic....E. E. F. Creighton
Conduit....H. H. Balliett
Connecting device between a draft and a drag member....J. A. Gregory
Control system....J. L. Hall
Controller....J. F. Menningen
Cooker, Fireless....C. A. Lauzen et al.
Coop, Chicken....L. M. Rich
Coop, Knockdown chicken..W. H. Compton
Cop tube....H. Kellerman
Copying apparatus, Letter....E. A. Klaber
Corn butting machine....J. Morral
Corn sheller....C. McKee
Cornice brake....H. Higgin
Cotton chopper and cultivator....G. D. Fargason
Cotton cleaner....S. Williams
Cover fastening and releasing device....W. H. Smith
Crate, Collapsible, ventilated....L. A. Williams
Crucible furnace....D. R. Steele
Cultivating device...F. M. Shonkwiler et al
Cultivator....W. L. Paul
Culvert mold....G. B. Murray
Cup holder, Drinking....C. A. Bryant
Currency cutting and signing machine....A. C. La May
Current distributer, Wireless controlled....C. Wirth
Current motor, Alternating (Reissue.)....V. A. Fynn
Curtain and shade rollers, Spring mounting for....H. Czabor
Curtain pole....A. P. Geiser
Curtain pole....E. B. King
Cutting and printing machine....W. P. Marsh et al
Delivery goods receiving....I. T. Verdin
Demonstrating machine....W. R. Rae
Dental articulators, Platform for....G. B. Snow
Dental mirror....E. P. Beadles
Detonating composition....E. Goodwin
Die sinking or routing tool....G. Melling
Die structure....B. Adriance et al.
Dish washing machine....L. A. Haustetter
Display box....O. A. Wolf
Distilling Process of and apparatus for....C. T. Hanna
Ditching machine...H. W. and A. G. Gribler
Divinyl, Producing....F. Hofmann et al.
Door check....W. H. Aspegren
Door, Grain....J. Henry
Door hanger....A. H. Neller et al.
Door lock....J. Caldwell
Door mat....E. M. Forbes
Door operating mechanism, Automatic....W. D. Baker
Door, Sliding....C. Gordon
Doubling and twisting machines, Attachment for thread....G. F. Macfarlane
Draft attachment....A. Taicher
Draftsman's appliance....R. Williams
Drill....E. F. Cortinas
Drill presses, Milling attachment for....R. H. Ritter
Dust collecting system....H. L. Day
Dyeing vegetable fibers with halognated indigo and indigoed dyestuffs..A. Kertesz
Dust collector....O. M. Morse
Dyestuffs and making same, Reddish-blue vat....A Schmidt et al.
Edge chamfering machine....W. G. Eaton
Egg carrier....I. E. Herman
Electric apparatus, Vapor....O. O. Kruh
Electric fixture....J. L. Palmer et al.
Electric machine, Dynamo....W. H. Powell et al.
Electric machine, Dynamo..H. H. Ralston
Electric machine, Dynamo...B. A. Behrend
Electric machines, Brush for dynamo....A. Press
Electric machine, Regulating dynamo....G. H. Condict
Electric switch....E. M. Hewlett
Electric switch, High potential....C. C. Badeau
Electrical distribution system....J. P. Crouch et al.
Electrodes, Apparatus for graphitizing large....P. L. T. Heroult
Electrodes, Graphitizing..P. L. T. Heroult
Electromagnet....N. H. Suren
Electromagnetic apparatus....J McIntyre
Ellipsograph....C. Schrieber
Engine spark regulator, Explosion....C. H. Newman
Engine stop and speed limit..W. A. Mueller
Engines, Means for preliminarily heating internal combustion....A. A. Low et al.
Engineer's combination rod...A. Schroeder
Ensilage carrier....O. Borgen
Envelop machines, Gum roll governor for....A. Laubscher
Eraser tool....W. L. Siegel
Exploder, Delay action...F. Bernardi et al.
Explosive (3 pats.)....J. F. O'Brien
Explosives, Making unfreezable..V. Vender
Eye shield, Sanitary....J. F. Snyder
Eyeglasses, Finger-piece....E. C. Bernheim
Fabric marking machine (2 pats.)....G. Horvath
Fabrics, Machine for piling textile....C. J. Priester
Faucet....H. Forsman
Faucet....C. Schlatterer
Feed bag....A. Schultz
Feed bag....S. Savosick
Fertilizers by aid of fermentation, Rendering mineral substances available as....G. F. Lawton
Filaments, Mounting and soldering electrical....S. Marietti
File cabinet....W. E. Ryan
Filing unit, Metal....A. H. Schaffert
Filter apparatus....B. W. Traylor
Fire alarm apparatus, Automatic....G. F. Emch
Fire extinguishing apparatus....E. T. and E. W. Copeland
Firearm....C. A. Young
Firearm, Automatic....I. Johnson
Firearm, Hand....F. T. Russell
Fireplace, Portable....C. L. Taylor
Flat iron stand and polisher..G. G. Hunt
Flexible coupling....W. J. Francke
Floor sweep....H. L. Day
Fluid pressure engine....C. B. Redrup
Fly catcher....H. Fingerhut
Fly escape for screens....H. W. Welty
Flying machine....V. E. D'Urso
Flying machine....M. L. Shackleford
Flying machine....J. W. Wilson
Flying machine safety appliance....L. W. Stolp
Folding chair....J. Kitak
Folding machine....J. D. Morgan
Footwear, Ventilating cushion for....F. J. Drobinski
Forging press....C. von Philp
Form, Folding garment....B. Cahn
Fountain tank....A. N. Eaton
Frequency responsive device....B. Frankenfield
Friction top can, Compartment....H. W. Jones
Fruit picking bag....F. W. Burch
Fuel briquets, Making....A. M. Mitchell
Fuel feeding apparatus, Powdered....W. R. Dunn
Furnace cover....C. S. Robinson
Furnaces, Device for promoting combustion in....E. Honess
Furnaces, Means for controlling the air-supply to locomotive boiler..J. H. Hume
Furnaces, Pot filling apparatus for glass....P. Hoffmann
Furniture construction....A. H. Schaffert
Fuse adjusting machine....W. Schwartz
Fuse and adjusting key therefor..U. Wilck
Fuse, Mechanical time....K. Wieser
Gambrel....F. H. Pierce
Game....E. P. Jessop
Game apparatus, Puzzle....E. G. Johnston
Game counter....W. L. Deming
Garbage receptacle....L. A. Moran
Garment closure, Weatherproof....L. T. Sawyer
Gas lighter....E. Lamprecht
Gas producer or generator....A. J. Rickle
Gate....I. Martin
Gate....R. Moore
Gear wheel....J. Say
Gearing, Feed....J. R. Perrine
Gearing for motor vehicles, Transmission..R. G. Hardgrave et al.
Gearing, Friction....F. D. Leach
Gearing, Transmission....A. F. Dickey
Gearing, Variable speed..J. J. H. Sturmey
Gilding tools Appliance for supplying ribbon gold to rotary disk..J. C. Merwin et al.
Glass gage cutter....E. F. Fletcher
Globe and globe holder....E. E. Frederick
Globe and shade holder....W. C. Homan
Globe holder (2 pats.)....J. E. Martin
Governor, Engine or like..J. Taylor et al.
Governor, Speed....A. Kindberg
Grain binder packer arm....H. Bohlinger
Grain drier....F. R. Morris
Grain elevator wagon dump and conveyer mechanism....F. J. Zimmerman
Grate....O. H. Krueger
Gravity lock....J. H. Carlstedt
Grease cup....O. Zerk
Grease paint, burnt cork, &c., from the face, Compound for removing....E. J. M. Hart
Grinding mill....G. S. Emerick
Gripper....C. A. Juengst
Gun to be mounted upon automobiles....N. Koch
Guns and the like, Sighting device for machine....B. Svistounoff
Guns, Fluid brake for recoil..W. Heilemann
Guns, Fore arm lock for..J. C. Kremer et al
Guns, Ventilated sighting rib for....F. O. Hoagland
Guns with recoiling barrels, Valve for hydraulic brakes in....E. Olsson
Hair steaming device....T. Grosert et al.
Hand bags, pocket books, &c., Frame for....L. B. and L. L. Prahar
Harness hook....A. Denton
Harrow, Flexible....J. L. Townsend
Harvesting machine pitman connection....J. H. Downing
Hasp....O. C. Shaffer
Hat pin guard....A. C. De Sheppard
Hat pin point protector....O. G. Lee
Hay presser....H. C. Cashon
Heat insulated receptacles, Making....R. Hartwig
Heating electrical units, Apparatus for....H. H. Russell
Heating systems, Accelerator for hot water....A. G. Stapel
Heel cushion....G. W. Levan
Heel, Removable....F. Powyszenski
Heel scouring machines, Guard for....G. B. Gardner
Hinge....J. Gronek
Hinge....R. W. Onyons
Horse overshoe....H. Kassik
Hose to coupling nipples, Clamping band for attaching....J. W. Free
Hub, Spring....G. H. Davis
Husker....J. G. Fejfar
Hydraulic press....W. P. Bettendorf
Hydraulic presses, Flipper for feed mechanism of....W. P. Bettendorf
Hydrocarbon burner....R. Liddell
Hydrocarbon burner....A. R. Swaine
Hydrogen by autocombustion, Preparation of....G. F. Jaubert
Ice cutting machine....J. S. Kohr
Ice harvesting machine....S. M. Campbell
Igniting device....L. A. Voell
Ignition apparatus....W. Baltrusch
Inhaler, Medical....J. Leach
Innersole for welted shoes..H. F. Crawford
Insectifuge....O. R. Loewenthal
Insulating building material, Making....H. Ottmann
Insulator support....O. P. Megahan
Internal combustion engine...R. H. Powell
Internal combustion engine..E. R. Burtnett
Invalid's table....F. J. Collins
Ironing machine....C. T. Gilmore
Ironing table....J. T. Fields
Jewel chest, Safety....H. Schmarsow
Key retaining device....G. E. Allen
Kite....H. P. Guillo
Knife mounting, Stationary....L. Brown
Knitting machine....E. Dubied
Labels and the like, Roll holder for....E. F. Connors et al.
Lamp....W. H. Penick
Lamp, Hydrocarbon....A. R. Swaine
Lamp, Metallic filament....E. Farkas
Lamp, Storage battery....C. B. Bartley
Lamps, Heater or glower renewal for....O. Foell et al.
Lantern, Signal....E. W. Beane
Lasting apparatus....B. F. Stuber
Lasting machine....L. M. Brown
Lasting machine....E. L. Keyes
Lasting machine....C. S. Norden
Lathe screw machine....G. K. Atkinson
Lens cutting machine....F. L. Higgins
Lifting jack....N. Jantzen
Lifting jack, Fluid actuated....W. R. Chandler
Light post and the like, Street....G. Schumacher
Light support, Dirigible....W. A. Sapp
Lighting fixture....J. L. Palmer et al.
Link mesh, Machine for making....A. C. Pratt
Linotype machines, Matrix for....H. Petersen
Liquid dispenser....W. C. Maloz
Log car bunks, Collapsible chock for....J. M. Rohlfing
Log turning mechanism....W. M. Wilkin
Looms, Bobbin for weaving....A. Marazzi
Lubricant and preparing the same, Non-inflammable....J. W. Aylsworth
Lubricating device, Automatic..O. Winkler
Lubricator....H. C. Noffsinger
Magazines, pamphlets, sheet music, &c., Cover for....E. Davidson
Magnifying small mechanical effects, Electrical means for....E. S. Heurtley
Mail bag catcher and deliverer....G. Hall et al.
Mail carrier....C. Maar
Massage apparatus....C. Endorf, Jr.
Match box....J. F. Murray
Match making machine....T. Nimmo et al.
Matcher head....J. W. Gray
Measuring instrument, Electrical....W. E. Beede
Meat chopping machine....A. Neilsen
Mechanical movement....C. F. Knowlton et al
Mechanical movement and electric light socket....T. A. C. Both
Metal, Composite....L. B. Tebbetts 2d.
Metal tubes, rodes, &c., Manufacture of....H. Reinhard
Metals, Electrotype deposition of....P. Marino
Metals, Preparation for regenerating....B. Turke
Milking machine, Cow....F. E. Newell
Mirror holder....R. H. Le Page
Mirror support....C. S. Busby
Mold....E. J. Wilber
Molding apparatus (3 pats.)...A. A. Pauly
Molding apparatus....R. R. Rust
Molding machine....J. N. Battenfeld
Mop holder and wringer, Combined....P. Fuhrer
Molding machine...L. J. Monahan et al.
Motor actuating apparatus, Water....P. Sander
Motor, Four-phase, single piston, valveless....C. N. Henriod
Motor operated switch....H. W. Cheney
Motor reversing mechanism....J. W. Eisenhuth
Mower grass catcher, Lawn..C. S. Bonham
Nail assorting mechanism....C. C. Small
Nail, Wire....S. E. Bell
Nicotin, Means for absorbing...S. A. Reed
Nitrogen oxids, Absorbing..C. Bosch et al.
Nozzle....G. H. Horlacher
Nozzle, Sprinkler....R. M. Hunter
Nut lock....W. M. Christianson
Nut lock....F. D. Bozarth
Nut lock (Reissue)....C. C. Blossom
Nut locking device....J. H. and E. W. Bullard
Obstetrical device....J. Stoger
Oil burner....H. T. Smith
Oil burner....J. B. Cowper
Oil burner....H. M. Daggett
Oil cake pan....A W. French
Oil can, Non-explosive..E. J Walsh et al.
Oil, Non-inflammable lubricating....J. W. Aylsworth
Oiler, Force feed....A. Levedahl
Ore concentrating launder..P. R. Stanhope
Oven, Baker's....F. Kuhtz
Oxone, Apparatus for preparing....G. F. Brindley
Oyster fork....J. B. Porter
Package of commodity....J. O. E. Krohn
Padlock, Combination....E. Porter
Pail and cover therefor....L. T. Roenitz
Pail, Lard....E. C. Ritchell
Paper cutting machine (2 pats.)....D. T. Wadhams
Pastes, Machine for cutting dried....K. Gammel
Pattern rack....F. H. Tobbenboske
Pavement....R. S. Blome et al.
Pen and pencil holder....G. P. Boardman
Perfume preparation....G. L. Clarke
Phonographic recording and reproducing device....S. W. Wylie
Photographic lenses, Automatic focusing apparatus for....L. J. R. Holst
Photographic lenses, Means for mechanically focusing (2 pats)....L. J. R. Holst
Photographic plates and films, Developing.. (2 pats.)....H. M. Prindle
Photographic print washer...E. N. Burdick
Piano, Player....J. H. Dickinson
Piano players, Action for pneumatic....E. V. Carlson
Pickling bath, Hot....F. F. Farnham
Pile driving device....M. Cazin
Pin....C. F. Markham
Pipe coupling....W. E. Moreland
Pipe cutting tool....B. Borden
Pitman connection (2 pats.)....B. R. Benjamin
Planter, Corn and cotton..M. T. Hooper
Plaster board....D. A. Cameron
Plaster board, Machine for making....D. A. Cameron
Plaster board, Manufacturing....C. W. Utzman
Plow, Gang or sulky....H. Sternberg et al.
Plowing machine, Moldboard....W. G. Parmele
Plowshare attachment..P. H. Hickle et al.
Plug socket....J. W. Phelps
Pocket knife....J. V. Weckbaugh
Post hole digger and shovel....W. F. Fryckberg
Postal card, puzzle, boat, and box, Combined convertible souvenir and advertising....S. L. Lazaron
Power plant, Soda boiler steam....R. D'Equevilley-Montjustin
Pressure recorder, Long distance....J. W. Bard
Printing machine....E. P. Sheldon
Printing plates, Production of lithographic....L. Bassani
Printing press....W. F. C. Foster
Printing press, Bed and cylinder....A. T. H. Brower
Printing press dampening mechanism....W. H. Smith
Printing press punch....I. C. Whitman
Printing press sheet feeding mechanism....F. Westerbeck
Printing press sheet registering device....H. Honigmann
Printing presses, Counting attachment for....W. J. Ramsaier
Projectile, Ordnance....H. Stanbridge
Pulling over machine....R. F. McFeely
Pulley....R. W. Dull
Pulley cap, Sash....R. F. Hamilton
Pulley, Sash (2 pats.)....J. H. Foote
Pulley, Sash cord (2 pats.)....J. H. Foote
Pump, Air....F. J. Schaefer et al.
Pump, Automatic tire....A. Brest
Pump cap....L. M. Rich
Pump, Double setting....G. St. Peters
Pump, Internal combustion liquid....E. B. Badcock
Pump jack, Double acting...W. T. Pittman
Pump, Liquid....L. H. Nash
Pump or blower, Centrifugal..M. Newmayer
Pump or motor....R. Ullman
Pump pressure regulator..R. W. Wittemann
Pumping apparatus....F. A. Allen
Punching press feed mechanism....V. H. Bien
Puzzle....E. R. Snedaker
Radiator....F Schneider
Radiator tubes, Manufacture of....E. and H. Behringer
Rail fastening....G. D. Hill
Rail point....G. Fabrizi
Rail joint....J. D. Koher
Rail joint....J. H. Underwood
Rail joint....F. E. Cottier
Rail splice plate....A. P. Bamberger et al.
Rail tie or sleeper....S. Mogyorosi
Rails to ties, Device for securing....O. H. Courson
Railway crossing....C. and G. Ulsh
Railway signal mechanism, Electric....R. D. Beatty

Railway device, Safety....J. M. Galloway
Railway signaling apparatus.....C. W. Coleman
Railway switch.....C. E. Estes
Railway switch, Automatie....O. L. Lance
Railway switches, signals, &c., Safety bolt to lock and release the levers serving to operate.....C. Legrand et al.
Railway tie.....W. Iring
Railway tie.....V. Tisi
Railway tie, Cement.....H. G. Reckinger
Railway ties, Rail fastening means for.....H. K. Powers
Railways, Antomatic brake applying means for A. Minnick
Rat trap.....S. Molnar
Ratehet wrench.....J. F. Bosserman
Receptacle for thread, eord, silk, and the like.....C. J. Ulmann
Recording device.....G. F. Hoover
Reel for strip material..R. A. Moore et al.
Refrigerating machine.....M. Leblane
Refrigerator room.....F. Zcipen
Rheostat.....W. H. Gaulke
Road icer, Steam.....H. S. Parker
Rock drill.....J. M. and J. L. Holman
Rock gathering and exeavating machine.....D. A. Gilehrist
Roll, Collared spirally wound.....C. S. Lockwood
Rope clip.....J. S. Crosland
Rotary engine.....J. T. Aabel
Rotary steam engine.....L. B. Gesner
Rubber vehicle spring.....M. Handy
Sad iron, Elcetrie.....V. Sehild
Saddles, Apparatus for making harness.....W. F. Treece
Sash, Window.....W. S. Hamm
Sash, Window.....R. H. Newpher
Sash, Window.....E. H. Lunken
Saw gummer.....E. Smith
Sawmill dog.....A. A. De Loach
Sawyer's clamp.....F. C. Preus
Scale, Rapid weighing.....N. B. Converse
Scale seoop.....F. H. Martin
Scales, Chart for compnting.....A. W. Loshbongh
Seal press, Registering.....C. D. Stamper
Seals, Tool for removing..J. J. Ferrall et al
Sealing device, Bottle.....S. Krnka
Sealing device for wrappers...J. E. Lang
Seeondary battery.....G. J. Johnson
Semaphore pole...C. A. Helderman et al.
Separating substance in suspension by washing.....B. Schwerin
Separator.....H. L. Day
Separator cleaning raek, Grain.....R. L. Owens
Serving apparatns.....F. Korff
Sewing machine.....A. B. Fowler
Sewing machine shuttle.....H. A. Bates
Shade braeket.....J. M. King
Shade roller and window curtain fixture, Adjnstable.....R. A. Kottkay
Shades, Cord holder for window.....W. B. Caswell
Shears.....G. Zell et al.
Sheet metal articles, Machine for making.....B. Adriance et al.
Sheet metal box.....J. Schaffer
Shirt.....R. Bartell
Shock absorber.....O. B. Ames
Shock absorber.....S. W. Rife
Shock absorber.....W. R. Sturgeon
Shoek loader and unloader..J. B. Schuman
Shoe jack.....A. Eppler
Shoe ornament.....C. P. Keighley
Shuttle, Hand threading....A. Guldemann
Sign, Door.....E. F. Goodwin
Sign, Door.....E. McClung
Signal.....I. L. Fake
Signaling and safety device, Submarine.....C. Brown
Signaling deviee, Eleetrical..T. Weiss et al.
Signaling device, Electrical.....T. Weiss
Sizing agent and making same.....F. H. Kalbfleisch
Skiving machine.....E. F. Davenport
Slugging or nailing machine..M. T. Denne
Smoke elevator and concentrator.....W. F. Geyer
Snipping machine.....L. W. G. Flynt
Sole beveling and fleshing machine.....J. J. Gillespie
Sole edge protector for boots and shoes.....T. C. Plant
Sole holding deviees.....J. F. Quigley
Sole maehine.....E. E. Winkley
Spade arrangement....W. Heilemann et al.
Specialist's chair.....G. L. Poll
Speed mechanism, Change.....R. Milne
Speed regulator, Motor.....A. A. Tirrill
Spiral chambers from sheet metal, Forming closed continuous..J. O. Olson et al.
Spoke, Resilient..G. T. Reichenbach et al.
Spool attachment.....I. Howard-O'Keefe
Spool packing for silk, &c....P. B. Herrick
Spring eoiling and cntting machine, Coil..N. S. Harter
Spring wheel.....W. T. Dulany, Jr.
Spring wheel.....W. H. Howsley, Jr.
Square and other drafting device, T.....V. A. Rigaumont
Staeker.....O. L. Waggoner
Stamp, Hand.....H. S. Folger et al.
Starting device.....H. Henken
Stay bolt.....E. W. Clark
Steam engine.....E. J. Armstrong
Steam generator, Electric...S. Schoenbroon
Steam in turbine plants, Utilizing exhanst.....G. Forner
Steering gear.....C. J. Engle et al.
Storage system, Metal.....J. T. Moltrup
Stove and fnrnace.....F. A. Broussard
Stuffing box.....W. Smith
Stump pnller, Hydraulic....A. H. Prestbye
Sugar can.....R. E. Elliott et al.
Sulfuric anhydrid, Making.....H. Howard
Swinging fixture mounting....C. H. Driver
Switeh operating mcehanism, Electrie.....A. B. Allen
Talking machines and the like, Sonnd conduit or amplifying device for..A. Fischer
Telephone exchange system..E. E. Clement
Telephone holder.....M. Milewski
Telephone pay station.....G. A. Long
Telephone rceeiver shell.....J. F. Barbonr
Telephone system, Selective..W. F. Marten
Terminal clip.....P. C. Hains, Jr.
Testing jack.....R. T. Wingo
Thread protector and cutter..M. C. Temple
Threads and other lathe work, Device for cntting.....J. F. Ivason
Threshers, Tail board for bean.....H. N. Alwood
Threshing machine safety device..R. Gross
Ticket, Transportation.....J. M. Hoffner
Tie and rail fastener.....J Krynock
Timepieee, regnlating apparatus.....F. R. Alford
Tire casings, Making pneumatic.....N. W. McLeod
Tire, Emergency.....D. Nelson
Tire for vehicle wheels, Spring cushion.....A. J. Layhon
Tire protector or shield.....A. H. Morton
Tire Protcetor, Pneumatic..A. H. Rawitzer
Tire, Vehicle.....E. H. Bingham et al.
Tire, Vehicle.....A. Kleinatland
Tool holder, Machine.....R. B. Craig
Tool, Pneumatic impact.....C. K. Pickles
Tooth, Artificial.....F. Wikner
Torch, Parade.....F. Dutcher
Toy gnn.....G. Schrodel
Toy railway cars, Automatic coupling for..C. A. Hotchkiss
Toy wagon.....C. M. Harbison
Track sander.....M. J. Fowler
Transmission and control system.....H. M. Kinney
Traveler's companion.....C. Nelson
Treadle mechanism.....F. M. Furber
Trolley.....J. H. Walker
Trolley wheel.....E. U. Down
Truck, Car.....F. H. Van Sweringen
Truck, Harvester.....J. H. Downing
Trumpet.....J. M. Landon
Turbine.....J. H. Felthousen
Turbine, Fluid pressure.....A. W. Clarke
Turbine governing mechanism.....W. Pape
Turbines, Governing mechanism for mixed pressnre.....W. Pape
Twisting machine.....J. Ryan
Type casting machine, &c., Metal pot for..J. S. Thompson
Typewriter.....Z. G. Sholes
Typewriters, Mechanism for feeding paper to.....T. A. McCall
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Watch, Stem winding and setting.....J. A. Freund
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Animal trap.....C. M. Harrington
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Electric machine, Dynamo.....R. B. Williamson
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Embroidery, Perforating operations incidental to machine.....H. Bosshardt
End gate rod rock.....J. Nohava
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Engine sparking device, Internal combustion.....C. C. Williams
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.....A. G. Elvin
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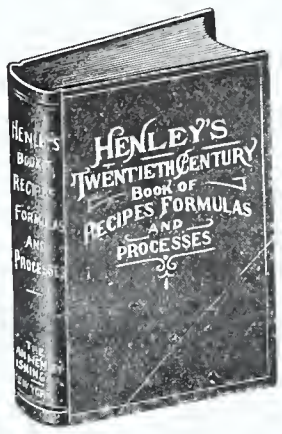
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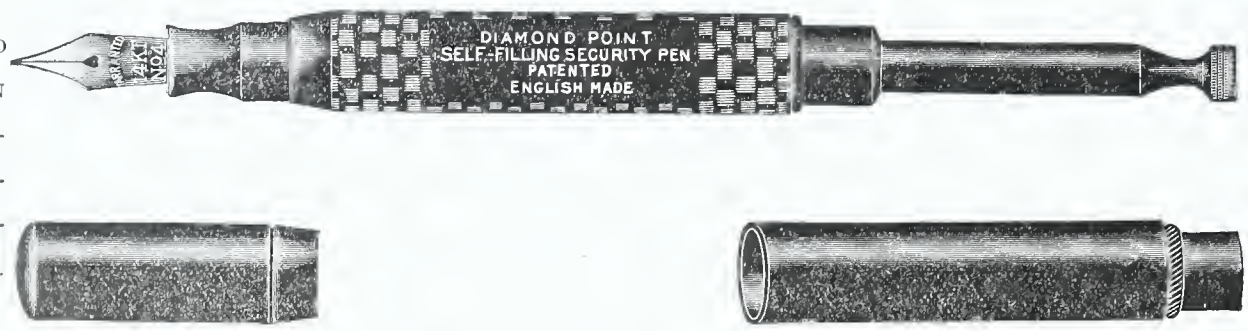
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The INVENTIVE AGE

A Journal of Manufacturing Industry and Scientific Progress.

VOL. XXIV. NO. 9. | WASHINGTON, D. C.---SEPTEMBER 1, 1912. | SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

AUTOMATIC MAIL EXCHANGE EQUIPMENT.

By FRANK C. PERKINS.

It is held that the new automatic mail exchange system illustrated in the accompanying photographs solves all of the vexing problems in the exchange of mail between fast running trains and stations. The mechanism connected to the axle of the mail car by a worm-reducing gear opens the door, delivers and receives the mail at other stations, and closes the door. It is said that hundreds of actual tests have proved beyond any doubt that the exchange of mail can be made automatically with just as much certainty and security as the thousands of other things that have been brought to perfection by the use of automatic machinery.



Fig. 1.—Mail bags ready to be conducted into the mail car.

The photograph, Fig. 1 shows twelve mail bags as they are held in position by the crane arms ready to be conducted into the mail car. Fig. 2 shows the bags as deposited on the floor of the car by the receiving chute or catcher arm of this automatic mail exchange system, the bags not rolling forward or backward. The delivery chute always spills its load of mail on the station platform at the same place, (Fig. 3) regardless of the speed of the train.

It may be stated that the cranes are of an entirely new type. The arms are simply large spring clamps holding the pouches at top and bottom and swinging with the train when the receiving mechanism conducts the pouches into the mail car. One pouch is hung in each crane and any number of cranes may be erected to fit the capacity of the town. These crane arms when holding pouches to be taken by the passing train stand 30 inches from the engine cab, thus preventing the injuring or killing of engineers and firemen while their heads are out of the cab window in the discharge of their duty. With this system installed, they can have their heads out as far as they please with perfect safety.

It is pointed out that the pouches and tie sacks are hung in the cranes at the station, and on being conducted into the mail car pass around a curve which gradually absorbs the momentum and causes them to drop gently on the the floor just in front of the opposite door, in the most convenient place. It is maintained that the delivery is made down an inclined chute upon a platform, eliminating entirely the heavy drop of the pouches from the car to the ground. A guard rail prevents the pouches thus delivered from rolling under the train, and absolutely guards them from damage or destruction.



Fig. 2.—Mail bags deposited on floor of car.

As the delivery is geared to the axle of the car, it is governed by the space traveled and not by the speed, so that no matter how fast or how slow the train is traveling, the delivery will be made at the exact spot on the raised platform each time. The exchange mechanism, being geared to the axle of the car and governed by the trip at the station, is locked so it cannot be extended except when tripped at the place selected for the exchange. This eliminates all possible danger, as is now the case when the postal clerk extends the hook at the wrong place. It is held that the receiving arms at all points along the road, except at the exchange station, are locked against the side of the car and extend outward only two inches. The delivery basket with its open ends stands just inside the car door.

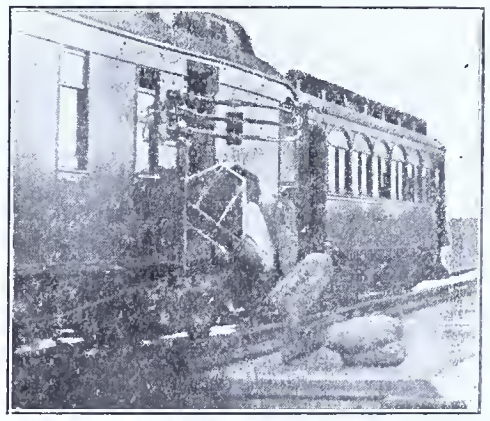


Fig. 3.—Delivery Chute.

It is claimed that the automatic action of this mechanism is as perfect as any in the world and that it solves all of the problems pertaining to the exchange of mail. It saves the postal clerk from injury when making the catch, and from damage suits from pedestrians he may strike in making the delivery. It saves controversy between engineer, station agent and postal clerk over the failure to catch the pouch. The hand method now in service, and the many devices suggested for the exchange of mail by hand, are all fraught with danger. The capacity of the system is limited and certain especially equipped pouches are required, while with this automatic exchange system, any kind of pouches in the service can be exchanged.

It may be stated that a mail car equipped with this automatic mechanism has been for over a year exchanging from one to a dozen pouches, varying from an empty one to one weighing 100 pounds, at Overland Park, the post office department having authorized the handling of the mail in this way to test its practicability. It is said that there are over 5,000 mail cars in the United States, of which over 1300 are whole cars and some 3700 apartment cars, while the number of pouches and sacks in use is about three million, and the number of pouches and sacks repaired during the year over one million.

It is estimated that there over 12,000 stations in the United States where catcher service is established. This catcher service is located on the main

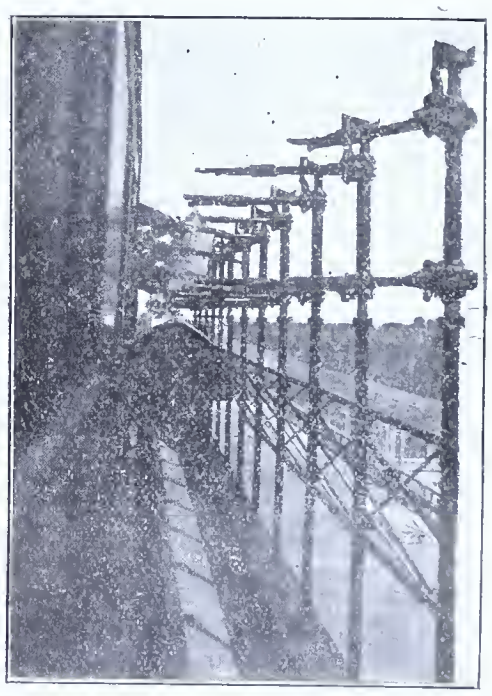


Fig. 4.—The Receiving Chute.

lines of railroads, where mail carrying trains do not stop. It is pointed out that this new system will enable mail cars to give their own signals automatically when approaching a station, and also will enable them to deliver more pouches and sacks on the elevated platform at the station than all the clerks in the car could deliver. It will also, it is said, enable mail cars to take up from the

station any number of pouches and sacks, up to 12, from 12 cranes. one at a time, without missing or knocking down any to be destroyed, and will take up any kind of mail sack without any hanging equipment.

A Giant Auger.

After boring holes the size of a knitting needle in the teeth of squirming patients until he got his hand in, a young dentist from Denver has enlarged upon the idea until at last he can bore a hole 16 feet in diameter right through the heart of a mountain of granite at the rate of a hundred feet a day. The inventor might well claim that the world is his oyster. Without making any such declaration, he is preparing to open it with the largest augers ever made.

This invention, says the *Technical World* Magaze, marks the culmination of more than half a century of efforts to develop a practical rock tunneling device. Many machines for this purpose have been invented, but half of them never got beyond the blue print and hot air state. Those that were built and tried proved to be excellent, save for the trifling defect that they would not work. A so-called tunneling machine was used in driving the great Simplon tunnel, twelve and a half miles long, under the Alps, but as it was nothing more than four ordinary drills mounted on a single frame, it hardly deserved the name.

The new machine employs no explosives, which loosen rock in the vicinity and make conditions unsafe. There has long been a demand for such an apparatus. Billions of dollars worth of minerals are hidden too deep in the rocks to be reached profitably by present methods. Many more railroad tunnels would be dug, if the cost were not so great. Since a locomotive can haul a much bigger load on the level than on a steep grade, the railroad lines are building tunnels as fast as they can. A tunnel 32 miles long, under the Cascade Mountains, has been proposed. Irrigation projects call for miles of tunnels, and so do waterworks. The city of New York is building 60 miles of double tunnels 8 feet in diameter, or 120 miles of single bore, to bring water from the Catskills. Boston, Philadelphia, Chicago, all have the subway habit. Altogether there are tunnels to be built everywhere, for one purpose or another, and there would be many more if it were not so expensive.

The cost of tunnels varies according to the rock and other local conditions, so that it is impossible to make an average statement of the expenditure. But to quote some specific instances, it cost $240 per lineal foot to build the Simplon. A short tunnel dug by the Baltimore and Ohio in 1891 cost $114 per lineal foot. Tunneling by present methods is slow. The world's record in any kind of material was made in August, 1909, when the Red Rock tunnel of the Los Angeles waterworks was driven 1,061 feet through a rock so soft that holes were bored in it with ordinary augers. The rock record of America, made in drivlng a tunnel of the New York water works system, was 531 feet of tunnel 12 feet in diameter through the Hudson River shale in 31 days, working three eight-hour shifts per day. This is an average of a little over 17 feet in 24 hours. The Swiss can make better time than this. But the claim that the new machine can bore from 50 to 150 feet in 24 hours with but a single man to attend to it, at a cost of $300, is most impressive. Trial runs have shown that the machine can do this. It only remains to be seen whether it can keep up this average, day in and day out.

Roughly speaking, the machine imitates the motions of a stone cutter. It holds a cutting tool pretty much like a hand tool. at the same angle the hand would hold it, and it strikes it just as a stone cutter does. Fifteen tools are used to bore a hole 8 feet in diameter. These are operated by compressed-air cylinders. substantially the same as that of an ordinary drill. These fifteen hammer drills are mounted on a massive cast steel revolving head with four arms, somewhat like the blades of a propeller. Each drill cylinder passes through the arm of the head to which it is solidly attached. The cylinders are supplied with compressed air at 110 pounds pressure through the main horizontal shaft, which is hollow, on which the head is mounted. This shaft is rotated by a powerful worm gear with a worm wheel driven by a 25 horse power, air engine mounted on the main frame. This revolving main shaft is pushed up against the rock face by a pair of horizontal hydraulic jacks, 8 inches in diameter and of 48 inches stroke. Pumps driven by an electric motor operate the jacks. The loosened rock is removed by a drag conveyor. The main frame is provided with diaphragms at front and rear, having sliding shoes with cylindrical faces engaging the face of the tunnel. On top of each diaphragm is a pair of 40-ton hydraulic jacks, with a stroke of 8 inches, which engage the roof of the tunnel and hold the machine solidly in position. The whole machine weighs 25 tons. In operation, the air is turned on the cutting tools, and the hydraulic pumps are started to push the head up in contact with the rock.

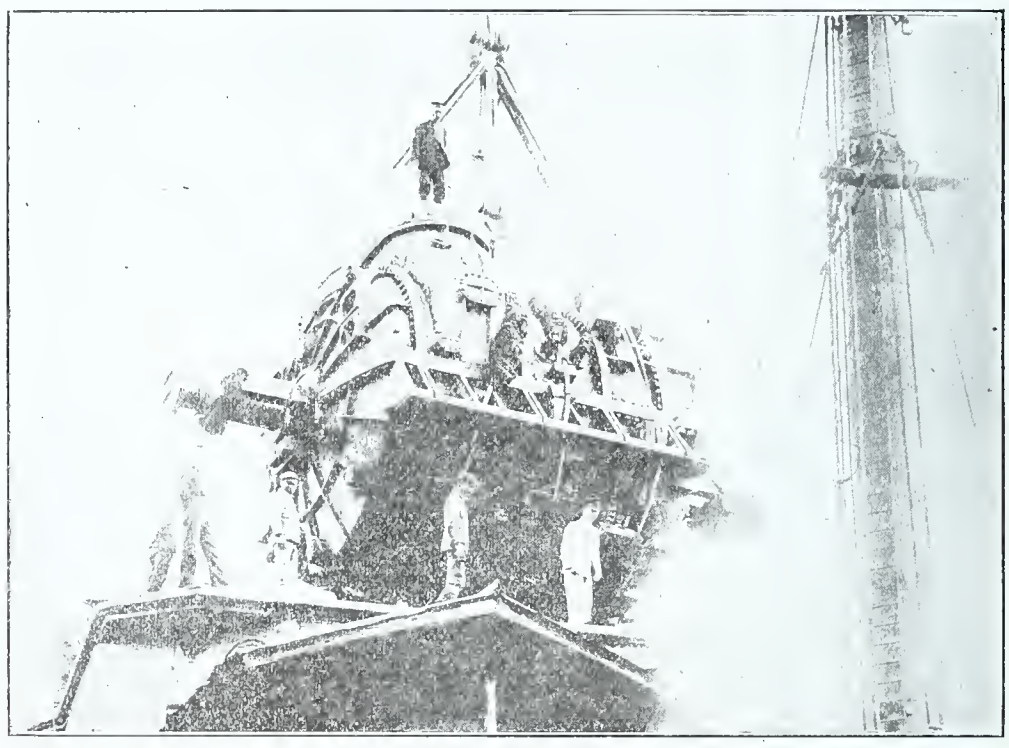
The machine was tested on a hill near New York, in a conglomerate combining the worst characteristics of marble and granite. In this atrocious combination the cutting tools only lasted four minutes. A two-pronged tool made of Simplon steel was finally tried. In cutting the Simplon, a rock was encountered so hard that progress was stopped until a special steel could be created. A combination of vanadium and tungsten—the hardest, toughest metal yet known—was compounded, and used with success. It has since been known as Simplon steel, and it cut the rock in the giant auger. Machines are now being built which will bore holes 16 feet in diameter and have 48 cutting tools. The inventor is Dr. O. S. Proctor, who worked at one time in the Colorado mines, and there learned how refractory a rock can be.

REMARKABLE STEAM TURBINES.

THE design and construction of the steam turbines for driving the twin screws of the Japanese armored cruiser "Ibuki" may be seen in the accompanying illustration. They are guaranteed to develop 21,600 brake horse power.

During the official trial of this Japanese vessel the two Curtis reversible marine turbines, built at Quincy, Mass., devcloped at full power 27,142 brake horse power. with a steam gauge pressure at the steam chest of 239 pounds, with 53 degrees superheat and 25.7 inches exhaust shell vacuum.

The cruiser attained a mean speed of 21 2 knots per hour during this trial of six hours, the turbines operating at a speed at a speed of 250 revolutions per minute with an efficiency of 52 degrees. The efficiency at 4-5 power for these turbines was found to be 49 2 when developing 20,978 horse power.



In reversing the power of the turbines for a quarter of an hour 11,035 brake horse power were developed, the speed being 186 revolutions per minute. Each turbine has two reverse wheels and seven ahead wheels, all arranged inside the casing. There are four rows of moving buckets in the case of the first of the ahead wheels and the two reverse wheels, while three rows of moving buckets are provided for each of the other wheels.

The pitched diameter of the Japanese turbine is 12 feet, while that of the turbine of the United States scout cruiser "Salem" is 10 feet. Overload nozzles are provided for these turbines, as shown in the illustration, and during the full power trial of six hours when 27,142 horse power was developed, these overload nozzles were in operation.

Special problems have to be solved in the use of the steam turbine on war vessels. A combination system is used in some cases, three shafts being provided, and at certain speeds the reciprocating engine is employed on the center shaft, exhausting into the wing turbines. In vessels of the White Star Line which have adopted this means of propulsion, two reciprocating engines are provided, driving wing shafts and both exhausting into the same turbine placed on the centre shaft, and when maneuvering, direct to condenser. But it is believed best to entirely dispense with the reciprocating engine on vessels of war, especially in scouts and destroyers. These must develop at full power a considerable speed, and must always be ready to pass from ordinary cruising speed (say fourteen to sixteen knots) to very high speeds. Then the number of men in crew is limited, owing to lack of accomodation. and it is necessary to restrict to the minimum the number of engine and boiler room personnel. These conditions involve the use of engines and boilers of great flexibility and strength, and requiring the least manual effort. Under these circumstances, turbines and liquid fuel are indispensable. The cruising turbine which utilizes the expansion of steam between the receiver pressure and the corresponding pressure at the exhaust into the high pressure turbine, is designed for the required speed. By placing it on the shaft already driven by one of the main turbines, and by arranging certain details of rotation, exhaust, etc., the required efficiency is developed.

How to Get Copies of Patents.

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Motor Oil Ship.

The largest ship to be driven by internal combustion engines, and also the largest oil tank ship ever built, is being constructed for the German-American Petroleum Company by the German firm of Krupps. The boat will be 525 feet long, or nearly the same height as the Washington Monument. It will have a breadth of sixty-six and three-fourths feet, a depth of 41 feet, and a loading capacity of about 15,000 tons. The vessel will be driven by two 6-cylinder, 1,750 horse power engines, of the Krupp-Diesel type, which will give her an ocean speed of ten miles an hour. Two-thirds of the length of the vessel will be occupied by the tanks, which will be divided by transverse bulkheads into eleven compartments, which in turn are separated into 22 tanks, partitions being made by a longitudinal bulkhead extending the entire length.

Ukiah, Cal., Aug. 15, 1912.

Editor INVENTIVE AGE.

Dear Sir:—

I would like to suggest to fellow inventors through your columns what I think would be two profitable inventions. The reason I do not work them out myself is because I do not find the time and means for experimentation at my disposal. The first is a simple but practical windmill electric motor for generating and storing power from the wind direct, the power thus stored to be used at any time whether the wind is blowing or not. I believe this to be the best and simplest and most economical way of utilizing the force of the sun, for wind is sun-force in a different dress. The winds which sweep the earth are capable, if harnessed properly, of doing the entire work of the world, and in addition capable of generating heat enough to keep us warm during the winter. We need not fear though the coal supply of the earth be exhausted. So long as the sun shines and the winds blow, the earth is safe for both power and heat, but what we most need are simple yet efficient storage batteries so that we may store the power when the winds do not blow and have the power on tap during a calm.

The second invention I have in mind is a thermo-electric battery capable of utilizing waste heat escaping through thousands of chimneys and flues in homes and factories all over the world, and reconvert it into light. My method would be to make of the chimney itself a thermopile built so that while the inner ends of the metals are heated by the escaping heat, the outer ends of the metels extending to the outside of the chimney are cooled by the outside atmosphere. The greater the difference in potential or temperature the greater the flow of current. In the winter, when snow and frost and long evenings set in and we need more light, the conditions become ideal for generating the maximum quantity. And here we see, we can make the very things we dread minister to the wants of humanity.

Respectfully,

E. C. RODWICK.

MOTOR CAR FOR DRIVING RAIL SPIKES.

THE accompanying photograph shows a unique gasoline driven car, used for drilling the holes and for inserting the screw spikes which are said to prevent rails from spreading, thus avoiding many serious accidents. The relative holding power of a driven and a screw spike in holding a steel rail to a wooden tie is indicated by the sketch (Fig. 3.) The annual number of ties required for renewals and new track by the railroads of the United States alone is estimated at 154,000,000, which at an average cost of fifty cents each amounts to the enormous sum of $77,000,000. Less than half of these are hardwood.



FIG. 1.—MOTOR CAR FOR DRIVING SPIKES.

It is well known that soft wood ties become unfit for service from decay, chiefly of the fiber under the rail, where they are cut and destroyed by the rough nail spikes, and continually worn by the up and down play of both rail and spike. The screw spike has the advantage over the common nail spike, first it does not destroy the wood fiber when applied, and second that it has greater holding power—about four times—than the nail spike, which prevents the rail movement with its attendant result of loosening the spike and leaving an opening in the wood for moisture to penetrate.

One considerable factor preventing the general adoption of screw spikes in this country, has been the expense of putting them in by the crude hand methods and tools in use. This objectionable feature is now removed by the simple plan of using the gasoline driven car to operate tie-boring and spike-screwing tools, thus not only reducing the cost of spiking to the lowest point, but also making spiking much more rapid.

This motor car, with its equipment for boring holes and inserting screw spikes, has cranes on the drilling end which hold up the drilling devices when they are not in operation, and those on the spike driving end hold up the spike drivers at all times. These cranes not only take all of the weight but also take torsional thrust, so that all the operator has to do is to exert a downward pressure on it and keep the spike driver from slipping off the head of the spike, and to move the driver from one spike to another. The spike driver is hung in the crane, as shown, thus relieving the operator of handling its weight. The round part just above the rail is a friction clutch, which is adjusted to slip when the spike has been set down to the desired degree. Without this friction clutch the engine would be stalled, or the head of the spike twisted off.

Details of the mechanism are shown in Fig. 2. It will be noted that the engine is 4-cycle and air cooled, and has 12 horse power. The frame of the car is of hard wood, well braced and tied, and the gasoline tank is mounted thereon. The man to the left goes ahead of the car, and by the aid of the power transmitted through the telescoping shaft, screws holes in the ties and inserts the spikes. The man to the right follows the car and screws the spike down on the base of the rail. With the help of this mechanism, 300 holes per hour can be bored. The telescoping shaft between the car and the spike driver, allows three ties to be reached without moving the car. In boring the holes for screws, the work by machine is more than ten times as rapid as by hand, and requires much less skill and effort. The car remains on the track and is advanced as rapidly as the spikes are screwed into place. When not in use, the drill and extension shaft are hung in the hook of the crane. The same machine inserts and screws in the spikes.

The standard track laid by this gasoline car consists of one hundred and ten pound rails, carried on tie plates and fastened by means of spikes to treated ties. Besides the self-propelling section car, (with a gasoline engine powerful enough to permit of its use for pulling when necessary) two or three push cars are provided, loaded with section men and their supplies, such as jacks, claw bars, lining bars, shovels, ties and nails.

It is claimed that a work train engine always available for service would be less useful on a division than this car. There is a friction clutch especially designed for it and located between the engine and the propelling mechanism, which allows the starting of heavy loads from a stand still without stalling the engine. This clutch may be thrown out entirely, thus allowing the car to stand still, while the engine furnishes power for use by track and section men, for boring ties and inserting screw spikes. Other uses will follow the introduction of this car into section work. In connection with a small auxiliary air compressor or electric generator, it may operate riveting tools or other electric tools at a distance. It may spray paint on bridges, or turn a concrete mixer. It is claimed that with a moving machine blade attached, it can cut grass and weeds from the right of way, or it can be used to operate the mechanical tamping bars that are being developed.

The simplicity of operating the car is one of its valuable features. The lever in the spectator's hand controls the motion of the car backwards or forwards. The throttle and spark

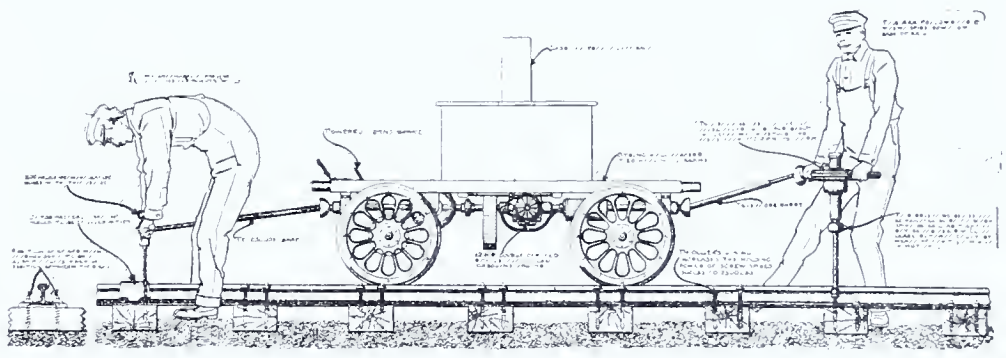


FIG. 2.—DETAILED VIEW.

control lever are on the seat just beyond the operator's right knee and the lever under his foot works the brake. At the back of the seat is the gasoline supply tank, which holds a sufficient quantity for ten hours' continuous operation.

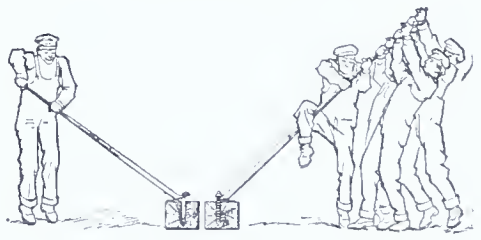


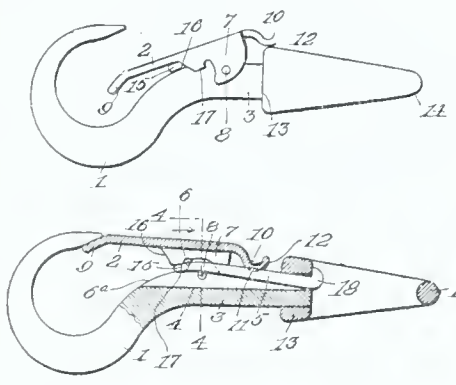
FIG. 3.—RELATIVE HOLDING POWER OF NAILED AND SCREWED SPIKE.

CLEVER NEW PATENTS.

Snap Hook---Sanitary Covers for Wagon Bodies. Photographic Film Washer---Advertising Device.

Snap Hook.

There are various forms of snap hooks on the market, and most of them employ springs. In freezing weather, it becomes difficult to open them. Frequently, occasions arise when they must be opened quickly in order to release a horse. A snap hook of novel design has been patented by Matti Maki, of Grelland, North Dakota. The hook is self-locking, is very strong and comparatively inexpensive in construction, and is easy to manipulate. The illustration represents a side view of the snap hook in its open position, and a longitudinal section showing the hook closed. The hook 1 is of the ordinary shape, and has its mouth closed by a pivoted tongue 2, which is pivoted to the shank 3 of the hook by a transverse pin 8. The attachment loop 13, 14, is formed with a longitudinal opening to receive the shank 3 of the hook, and is adapted to slide freely along the shank, being retained upon the shank by the locking slide 5, which it is adapted to actuate in one direction to cause said slide to move the keeper tongue to its closed position and retain it in such position.

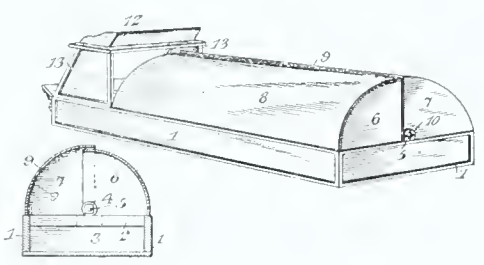


It will be noted from the first figure that the tongue is shown dropped away from the hook, having been forced to this position by the movement of the attaching loop 13. When it is desired to close the hook, it is only necessary to slide the loop 13, 14 rearwardly or outwardly upon the shank, whereupon the stop projection 18 on one end of the slide 5, causes said slide to move rearwardly in the channel 4 of the shank, and the cross-head 15 on the other end of the slide, will be caused to ride up the cam surfaces 6a on the hook, and then over the cam surfaces 16 on the tongue 2, so that the latter will be elevated to its closed position, shown in the second figure. When the attaching loop reaches the end of the shank, the cross-head at the inner end of the locking slide will engage the stop shoulders 6 upon the shank of the hook, so that the slide cannot move farther in a rearward direction, and the lug or projection 18 will prevent said loop from passing off of the shank. In this way, the tongue will be effectively locked in its closed position.

The invention has considerable merit, and is being offered for sale by the patentee, as appears from the "Patent for Sale" columns of this issue of our paper.

Sanitary Covers for Wagon Bodies.

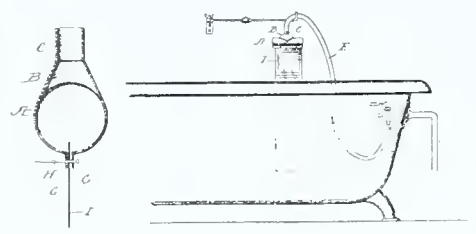
A novelty in the line of a sanitary cover that may be applied to any wagon to protect its contents from the weather, from flies or from theft, and that may be opened from either side, has been patented by David H. Sanders, of Flint, Mich. It is illustrated in the accompanying drawings, which give a perspective and a transverse sectional view of the same, and it will be seen that the wagon body has bars 2 at its front and rear, having bearing brackets 3 to receive bolts 5. These are longitudinally alined and pierce the ends of quadrant shaped cover sections which fold one within



the other. The ends of the sections are overlapped and are provided at the points where the bolts pierce with bearing plates 10, and have openings which register with the openings of the eyes 4 of the bearing brackets. The cover sections may be of wood or metal, and are so light that they add but little weight to the wagon. When closed their lower side edges rest upon the upper edges of the sides of the wagon body. A transverse partition extends across the wagon body at the front end, and helps to form a weather tight closure. Space is left at the front end for a seat, and in front of the partition the space is open, so that access to the contents may be had from that direction.

Photographic Film Washer.

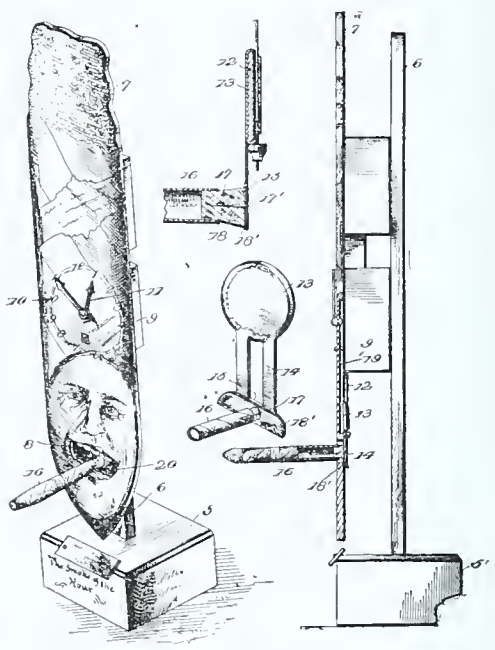
In washing photographic films, it is found difficult to avoid injuring the latter by handling. A device to avoid this has been invented by Robert F. Troxler, of Evansville, Ind. It consists of an arrangement for securing one end of the film, so that water passing through a nozzle will be delivered on both sides of the film; and it also can be used for drying the film after the same has been washed, the nozzle serving the purpose of preventing the film from curling when the same is suspended in an inverted position. As seen in the accompanying cuts, which represent a front elevation and a transverse section of the device, the nozzle has a cylindrical body with an enlargement B, having a nipple C to which is connected a piece of rubber hose E, through which water is supplied from a bath room spigot or from any convenient source. The body is provided with a longitudinal slot having flanged edges forming spaced clamping members G, which are provided with openings registering with one another and through which pins H are adapted to pass for securing the end of the film I. It will be seen that by placing the nozzle in a support, the film will be so held that when the water



is turned on it will be distributed upon both sides of the film so as to remove the chemical therefrom. After the film has been cleaned the flexible tube is detached from the nozzle and a clip attached to the lower end of the film, which is supported by a suitable bracket, whereby the nozzle will act as a weight in order to hold the film when suspended, so as to prevent the same from curling.

Advertising Device.

In the effort to introduce new brands of cigars on the market unique advertising devices are constantly sought. One of the most original, which is guaranteed to catch the attention of the passer-by, has been patented by C. F. Chouffet, of Buffalo, N. Y. He provides a support to the back of which is fastened a front plate which represents a cigar, the upper end painted to represent ashes and the lower end to represent a human face with an open mouth. A clock or other motor is placed behind this front plate, and a dial is drawn on the plate above the face, the hands of the clock moving over the same in the usual manner. The pendulum of the clock is enclosed in a metal casing, this latter being continued downwardly to produce spaced arms 14 connected by a bar 15, which supports a display device in the form of a cigar 16. This is hollow and is corked at one end. A pin 17 projects from the bar, the point of which is adapted to enter the enclosed end of the cigar and hold it in position on the pendulum, so that as the latter oscillates, a corresponding movement will be imparted to the cigar, thus attracting the eye of people in the street. Between the cork



and the outer face of the bar is a strip of colored paper or cloth which moves with the pendulum and looks like the roof of the mouth. The inner face of the front plate is cut away to form a pocket to receive the pendulum, and prevent the latter from striking the plate when the pendulum is tilted by the weight of the display device. It will be seen that as the pendulum oscillates, the cigar will move accordingly, and constitute an effective advertisement.

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

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GENERAL ELECTRIC CO. v. ALLIS-CHALMERS CO.

(Circuit Court, D. New Jersey. Dec. 27, 1911. 193 F. R. p. 58.)

PATENTS—INFRINGEMENT-ELECTRIC MOTOR CONTROLLER.

The Knight and Darley patent, No. 554,276, for a controller for a dynamo electric machine, claim 6, the chief element of which is a blowout magnet for the purpose of extinguishing arcs which are formed whenever the electric circuit is broken, and the invention if any residing in the particular place of the location of the magnet and its armature, in view of the prior art is limited to the very form of construction shown. As so limited, it is not infringed by the device of the Stull patent No. 873,805, which shows a different organization of the magnetic system.

SUBMARINE ROCK-BREAKING CO. v. SUBMARINE CO. et al.

(Circuit Court, D. New Jersey. Dec. 27, 1911. 193 F. R. p. 63.)

PATENTS—VALIDITY AND INFRINGEMENT—SUBAQUEOUS ROCK-BREAKER.

The Rowland reissue patent, No. 12,933 (original No. 907,407), for a subaqueous rock-breaker, comprising the combination of a vertically disposed tube having closed side walls, a rock-breaking chisel fitted to move through the bottom thereof and having an inner headed end, means for maintaining air under the head of the chisel to exclude water, a hammer adapted to be reciprocated in the tube, and means for raising the hammer and dropping it upon the chisel, was not anticipted and discloses invention of a meritorious character, being more effective than any device of the prior art; also, held infringed.

SAMSON CORDAGE WORKS v PURITAN CORDAGE MILLS.

(Circuit Court, W. D. Kentucky. Nov. 11, 1911. 193 F. R. p. 274.)

TRADE - MARKS AND TRADE - NAMES — PROCESS OF MARKING CORD-APPROPRIATION.

A process of making checks on the surface of a cord, by twisting in one yarn of a markedly different color, cannot be exclusively appropriated for trade-mark purposes.

J. F. ROWLEY CO. v. ROWLEY.

(Circuit Court of Appeals, Third Circuit. Feb. 17, 1912. 193 F. R. p. 390.)

1. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION — ACCOUNTING — PROFITS

Where unfair competition consists in the use of a trade-mark in fraud of complainant's rights, affixed to or covering packages sold by defendant, complainant is not bound to show the amount defendant's profits were actually enhanced by his unlawful use of the trade-mark, but is entitled to recover by way of damages the whole profit realized by defendant from the sale of articles under cover of the infringing trade-mark, under the rule that the infringer cannot complain, as he is suffering the consequences of his own wrong.

2. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—REMEDIES.

In a suit for unfair competition, an accounting of profits will not be ordered, where an injunction will satisfy the substantial equities of the case.

DECKER v. WESTERN BOTTLE MFG. CO.

(Circuit Court, N. D. Illinois, E. D. Dec. 28, 1911. 193 F. R. p. 415.)

PATENTS—VALIDITY AND INFRINGEMENT-NURSING BOTTLE.

The Decker patent, No. 531.773, for a nursing device consisting of a cell or receptacle having substantially an uncontracted and open upper portion closed by an elastic breast of dome-shaped form terminating at its apex in a perforated nipple, was not anticipated and discloses invention, and the device is one of merit because of its hygienic qualities. Also, held infringed.

POPE MFG. CO. v. ARNOLD, SCHWINN & CO.

(Circuit Court of Appeals, Seventh Circuit. Oct. 13, 1911. 193 F. R. p. 649.)

PATENTS-INVENTION—BICYCLE.

The Smith patent, No. 392,937, for a pedal-shaft bearing tube for bicycles built rigidly into and forming an integral part of the frame, is void for lack of invention in view of the prior art as shown in structures described in printed publications.

AMERICAN SULPHITE PULP CO. v. DE GEASSE PAPER CO.

(Circuit Court of Appeals, Second Circuit. Jan. 29, 1912. 193 F. R. p. 653.)

PATENTS — INFRINGEMENT — DAMAGES — LICENSE FEE.

Where complainant established the validity of a patent and defendant's infringement, but was unable to prove a uniform rate of license fee, or a uniform rate for the particular period during which defendant's infringement began, due largely to the different holdings, some in favor of and some against the validity of the patent, it was nevertheless entitled to recover damages based on the lowest rate of license fee charged and collected down to the time infringement began.

LOVELL-McCONNELL MFG. CO. et al. v. AUTOMOBILE SUPPLY MFG. CO. et al.

(Circuit Court, E. D. New York. Nov. 20, 1911. 193 F. R. p. 658.)

1. PATENTS — SUIT FOR INFRINGEMENT—ISSUES.

In a suit for infringement of a patent, a charge of unfair competition also, in that defendant has imitated complainant's device in form and design, is but a phase of the issue of infringement, and not a separate cause of action.

2. INJUNCTION—SUBJECT OF INJUNCTION—CIRCULAR INTENDED TO AFFECT RIGHTS INVOLVED IN PENDING LITIGATION.

A trade circular, issued by the defendant in a pending suit for infringement, asserting that its device is not an infringement, and that complainant's patent is not valid, and containing cuts of prior devices claimed to anticipate, is an unwarranted attempt to influence the trade in advance of the court's decision, and will be enjoined.

3. COPYRIGHTS— SUIT FOR INFRINGEMENT—MOTION FOR INJUNCTION TO RESTRAIN MULTIPLICITY OF SUITS.

The intervention of equity by injunction to prevent a multiplicity of suits cannot be invoked by motion in a patent suit, except in so far as the threatened litigation might interfere with the jurisdiction of the court in the pending suit itself, but is a matter for a separate suit.

4. PATENTS — SUIT FOR INFRINGEMENT—PRELIMINARY INJUNCTION.

Where complainants' case is not apparently complete to the point of reasonable certainty from any line of attack, a preliminary injunction should not be granted in an infringement suit without prior adjudication or complete recognition by acquiesceuce equivalent to estoppel.

5. PATENTS—VALIDITY AND INFRINGEMENT —AUTOMOBILE HORN.

A preliminary injunction against infringement of the Hutchison patents, Nos. 923,048, 923.049 and 923,122, relating to automobile horns, denied on the ground that the showing made did not establish validity or infringement with sufficient certainty in view of the defenses pleaded.

FRANK SHEPARD CO. v. ZACHARY P. TAYLOR PUB. CO.

Circuit Court of Appeals, Second Circuit. March 20, 1912. 193 F. R. p. 991.)

1. COPYRIGHTS—INFRINGEMENT—EVIDENCE OF COPYING.

Where, in a suit for infringement of copyright on citations of law reports, defendant's annotator testified that he had never used complainant's books at all, evidence of common mistakes in citations covering a period which were not copyrighted, and which he might have used at his election, was admissable as evidence of copying.

2. COPYRIGHTS—LEGAL PUBLICATION-COMMON ERRORS—PRIMA FACIE CASE.

In a suit for infringement of copyright on legal publications, proof of a considerable number of errors common to both publications occurring first in complainant's work, and none of which occurred first in defendant's work, created a prima facie case of copying by defendant, which it was bound to explain.

3. COPYRIGHTS — INFRINGEMENT—COPYING —BURDEN OF PROOF—EXPLANATION.

While, in a suit for infringement of copyright, the burden of proof is on complainant throughout, yet, on complainant's proving a considerable number of common errors occuring first in its own publication and none occurring first in defendant's work, the burden of explanation was shifted to the defendant.

4. PATENTS—INFRINGEMENT—REMEDY.

Where, in a suit for infringement of copyright on legal citations, defendant offered nothing but conjecture to explain a large number of common errors first occurring in complainant's publication, it would be necessarily inferred that complainant's work was similarly used as to the correct citations to an extent that could not be determined, authorizing an injunction against defendant's work in its entirety.

F. D. CUMMER & SON CO. v. ATLAS DRYER CO. et al.

(Circuit Court of Appeals, Sixth Circuit. Jan. 3, 1912. 193 F. R. p. 993.)

1. PATENTS — VALIDITY AND INFRINGEMENT—DRYER.

The Cummer patent, No. 545,120, for a dryer, for drying paint, powder, drugs, and other material, claims 7, 8, 9, and 10 are void for lack of patentable invention in view of the prior art. Claim 11 held valid and infringed, and claims 12, 21, 22, 23, and 28 not infringed.

2. PATENTS—UTILITY—ESTOPPEL BY INFRINGEMENT.

An infringer who has appropriated distinctive features of a patented invention cannot deny their patentable utility.

3. PATENTS—INFRINGEMENT—INJUNCTION.

Where some of the claims sued on are found invalid, but others are held valid and infringed, complainant must disclaim the invalid claims before taking an injunction upon those found valid.

WELSBACH LIGHT CO. v. ELKINS et al.

(Circuit Court, W. D. Pennsylvania, Feb. 21, 1912. 193 F. R. p. 999.)

PATENTS—VALIDITY AND INFRINGEMENT—GAS LAMP SHADES.

The Little patent No. 961,504 for a globe or shade for inverted gas lamps, having a metal neck for attaching the glass shade to the fixture to prevent its being broken by the extreme heat, discloses patentable invention; also held infringed.

AMERICAN TOBACCO CO. v. GLOBE TOBACCO CO.

(Circuit Court, E. D. Michigan, S. D. Dec. 2, 1911. 193 F. R. p. 1015.)

1. TRADE - MARKS AND TRADE - NAMES — WORDS SUBJECTS OF TRADE - MARK—"UNION."

The word "Union" cannot be exclusively appropriated as a trade-mark for tobacco packages.

2. TRADE - MARKS AND TRADE-NAMES—INFRINGEMENT.

The name "Union Leader" as a trade-mark for tobacco packages is not infringed by the name "Union World."

3. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—IMITATION OF PACKAGES.

Equity will not interfere as between manufacturers of goods put up in similar packages, where ordinary attention by the purchaser would enable him to distinguish between the goods of the respective parties.

4. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—IMITATION OF PACKAGES.

A defendant held not chargeable with unfair competition by the use of packages for tobacco similar to those of complainant where the principal similarity was in the use of a red color and the words "Union" and "Leader," to none of which complainant had an exclusive right, and especially where complainant placed a distinctive highly colored red, white, and blue band around its packages, which was not used by defendant.

GREENWOOD et al. v. DOVER et al.

(Circuit Court of Appeals, First Circuit. Dec. 12, 1911. 194 F. R. p. 91.)

1. PATENTS—SUIT IN EQUITY TO OBTAIN PATENT — BURDEN AND MEASURE OF PROOF.

The rule applied that in a suit under Rev. St. § 4915 (U. S. Comp. St. 1901, p. 3392), as amended, to obtain a patent which was awarded to the defendant by the Court of Appeals of the District of Columbia in interference proceedings, such decision must be given weight in the nature of a departmental decision, and, to overcome it, the evidence must be of such a character, and sufficient at least to require a clear conviction that it was erroneons.

2. PATENTS—SUIT IN EQUITY TO OBTAIN PATENT—EVIDENCE CONSIDERED.

Evidence considered in a suit under Rev. St. § 4915 (U. S. Comp. St. 1901, p. 3392), as amended, to obtain the issuance of a patent to complainant, and held insufficient to overcome the presumptiou in favor of the decision of the Court of Appeals of the District of Columbia on an appeal in interference proceedings which awarded priority of invention to the defendant.

GENERAL KNIT FABRIC CO. et al v. STEBER MACH. CO. et al.

(Circuit Court of Appeals, Second Circuit. Jan. 16, 1912. 194 F. R. p. 99.)

1. PATENTS — VALIDITY AND INFRINGEMENT—KNITTED FABRIC.

The Scott patent, No. 899,439, claims 2 and 4, for a knitted fabric and method of producing the same, discloses patentable novelty and invention; also held infringed.

2. PATENTS—ANTICIPATION—FABRIC.

Anticipation of a patent for a new and useful fabric is not shewn by evidence that prior to its invention a machine was in existence which by a few changes in adjustment was capable of producing the fabric.

3. PATENTS — VALILITY AND INFRINGEMENT — KNITTING MACHINE.

The Scott patent. No. 925,393. for a knitting machine for producing a ribbed fabric, held not infringed, if conceded invention.

WESTERN TELEPHONE MFG. CO. et al. v. SWEDISH-AMERICAN TELEPHONE CO.

(Circuit Court of Appeals, Seventh Circuit. Oct. 4,1910. Rehearing Denied July 27, 1911. 194 F. R. p. 100.)

PATENTS — INFRINGEMENT — TELEPHONE SWITCHBOARD.

The Fisk patent, No. 521,461. for a combined aunnnciator and spring-jack for use in telephone switchboards, covers an invention of novelty and merit, and is entitled to a range of equivalents which will fully protect it, but it is limited by its terms to a device having two elements, and is not infringed by a device having the old three-element structure.

COLUMBIA WIRE CO. v. KOKOMO STEEL & WIRE CO.

(Circuit Court of Appeals, Seventh Circuit. July 27, 1911. Rehearing Denied Oct. 4, 1911. 194 F. R. p. 108.)

PATENTS — INFRINGEMENT — PROFITS RECOVERABLE.

The measure of the profits recoverable from an infringer of a patent for a machine is the advantage he gained by the use of the patented machine, as compared with with other machines which were open to him at the time of the unlawful appropriation, and uot with such as were open at the date of the pateut.

SARFERT CO. v. CHIPMAN et al.

(Circuit Court of Appeals, Third Circuit. Jan. 23, 1912. 194 F. R. p. 113.)

1. PATENTS—ANTICIPATION — PROCESS AND MACHINE FOR SINGEING HOSIERY.

The Sarfert pateuts, No. 667,142, for a processs of singeing hosiery after it has been distended on a stocking board, and No. 758,937, for a singeing machine, are both void for anticipation by prior use.

2. PATENTS-INVENTION-PROCESS OF TREATING HOSIERY.

The Sarfert patent, No. 667,140, for a process of singeing hosiery "in the green," or after it has been saturated with an oxidizing solution, is void for lack of invention.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Allan Campbell, Brandon, Manitoba, Canada. Gate.—This invention relates to improvements in what are known as frameless gates, wherein a gate in the form of a section of wire fence is provided to be opened and closed along a straight line across the passage between two spaced posts, the gate being provided with weight mechanism which is placed in operative position when the gate is closed, and when the gate is released will operate to close the same. The invention consists of the combination with two gate posts spaced apart to provide a passage between them, a vertically disposed roller shaft mounted contiguous to one of said gate posts, a plurality of rigid spools mounted on said roller shaft, a series of wires individually connected to each of said spools, retaining means carried by the other gate post, a vertical standard connecting the free ends of the wires, an intermediate post carrying separate guides for the wires, and a weight connected to the roller shaft for rotating the same so as to cause the spools to wind the wires thereon and open the passage between the gate posts. The invention may be constructed of such material as may be obtained at any country store or blacksmith shop, and provides a gate that is cheap to manufacture, is reliable in operation, and will obviate the many disadvantages incident to swinging gates.

Charles Brown, Albert Lea, Minn., inventor: John E. Branson, Albert Lea, Minn., assignee. Skate. — The object of this invention is to provide a skate, designed especially for coasting or skating on packed or crusted snow, streets covered with sleet and upon other areas of ice when the use of an ordinary skate would be impeded by snow. It comprises in its construction two sections stamped or otherwise formed of sheet metal, and consisting of two plates arranged in a horizontal plane and constituting the foot receiving portion of the skate, and provided at their inner meeting edges with depending webs secured together and having laterally projecting flanges, which form the runner of the skate. The runner flanges are extended forwardly and curved upwardly at the front end of the skate, and are equipped with a reenforcing metallic curved brace, which is fitted against the upper faces of the curved extensions of the runner flanges, is interlocked at its rear end with the depending webs, and is provided at its front end with projecting lugs, said lugs forming an intervening recess to receive the front terminals of the extensions of the runner flanges.

Thomas F. Carroll, Eau Claire, Wis. Two patents.—The aim of the first patent is to provide a saw swage designed for operating on both band and circular saws, and capable of affording fine, accurate adjustments and of limiting the movement of the die bar or member to prevent the anvil from being subjected to injury by excessive pressure. The saw swage includes a head having a slot for the passage of a saw blade. Anvil and die members are located within the head. The die member is fitted in and supported by a hollow rotary die holder. The anvil is carried by a cylindrical support, which is mounted for rotary movement in the head, a set screw being employed for securing the said support in its adjustment. A screw is mounted on the support and forms an adjustable abutment for the anvil.

The second patent covers a saw toothshaper adapted to shape uniformly the teeth of a saw blade, and capable of being readily moved over the same and properly positioned with relation to the teeth without injuring the points of the same. The saw shaper may be readily adjusted to arrange it for operating on saw blades of different thicknesses and to position a saw blade centrally of the device. The saw shaper is equipped with reversible and interchangeable dies having a plurality of tooth-engaging portions adapted to be successively presented to a saw blade as they become worn. The saw shaper comprises a block or head having depending side portions recessed at their inner sides and provided in advance of the recesses with solid inwardly-extending portions, spaced apart at the front of the block or head to receive a saw blade between them, opposite jaws guided in the recesses of the depending side portions, and a gage plate secured to the underside of the head or block in the space between the said solid inwardly extending portions and projecting rearwardly to the recesses thereof. A longitudinal metallic strip is mounted at the rear portion of the space between the depending portions and is arranged to rest upon the cutting edge of the saw blade. The jaws are operated by opposite right and left hand screws, which are connected with an oscillatory handle or lever having a forked portion straddling the block or head.

Richard Fred Davis, Albion, Mich., inventor; Romondo Davis, Albion, Mich., assignee. Signal for Doors.—The object of the invention is the provision of means entirely automatic in its operation for indicating clearly and unmistakably the entrance and presence of a person in a room or compartment, as for instance a water closet or outhouse. The device, which is applied to the swinging door of the closet or room, consists of a rotary shaft mounted in the door frame and carrying an indicator at one end, a disk secured on the said shaft and having diametrically opposite notches in its periphery, a driving pulley loosely mounted on the shaft and provided with a radial slot, intermediate connections between the pulley and the door whereby the movement of the door will rotate the pulley, and a pin loosely mounted on the pulley and passing through the radial slot thereof and adapted to engage one of the notches in the edge of the disk. A curved guide is arranged adjacent to the periphery of the disk to hold the pin in engagement with a notch during one movement of the pulley, and to hold the pin away from the notch during the reverse movement of the pulley.

Marshall J. Freeman, High Point, N. C. Clothing Cabinet.—The clothing cabinet, which is designed for use in clothing stores and other places for displaying and protecting ready-made clothes, is adapted to contain a large number of suits, and is capable of advantageously displaying its entire contents and of permitting any suit to be readily removed without mussing, tearing or otherwise damaging the same or disturbing the other suits. By its use the labor of caring for and handling clothing will be lessened, as it will obviate the necessity of pressing suits before sending them to customers purchasing the same. The clothing cabinet consists of corner uprights, transverse end bars connecting the corner uprights between the terminals thereof, side longitudinal bars connecting the upper ends of the corner uprights, a central longitudinal bar having depending arms secured at their lower ends to the transverse end bars, and intermediate longitudinal supporting bars located below the plane of the central and side longitudinal bars and provided with arms secured to the transverse end bars. The cabinet is also provided with a central brace consisting of a central post, a transverse bar mounted on the post and having upwardly extending arms connected with the side and intermediate longitudinal bars. A rectangular base surrounds the rack and rests upon the floor or other supporting surface to exclude dust from the cabinet. which is also provided with side and end curtains.

Julius Guentner, Milwaukee, Wis. Screen for Doors and Windows.—This invention has for its object to equip door and window screens with an efficient fly escape, adapted to permit flies and other insects to crawl outward from the inner face of the screen, and capable of effectually preventing them from passing from the exterior to the interior. The screen comprises in its construction a rectangular frame, a sheet of screen material arranged flat against the frame and spaced from the top bar thereof to provide an opening, and a transverse slat pivoted intermediate of its upper and lower edges between the sides of the frame and midway of the said opening and adapted to be swung to an inclined position, so as to project through and across the opening with its lower edge extended below the upper edge of the screen to provide a fly escape. The slat may be turned to a vertical position to tightly close the opening at night.

Nicholas Marx and John Ketzner, Mount Hope, Kan. Mold for Culverts.—It is the aim of this invention to provide a mold for molding culverts with vertical sides and arched tops, and equipped with means for molding wings at either or both ends of the culvert to prevent the soil from being washed away at the sides. The culvert mold is adapted to be set up by one person, and after a culvert has been molded and the plastic material set, it may be readily removed from the finished culvert and used repeatedly. It comprises vertical side frames, vertically disposed blocks arranged at intervals on the inner faces of the side frames and provided with vertical slots, bolts operating in the slots for adjustably securing the blocks to the side frames, rigid arched supporting members spaced apart and removably seated at their lower ends upon the blocks, and a collapsible arched cover composed of longitudinal bars placed edge to edge and resting upon the upper outer faces of the arched members and also upon the upper edges of the side frames. Two of the longitudinal bars are beveled and overlapped to form an automatically collapsible joint, whereby the cover is collapsed by lowering the blocks at each side of the mold.

James W. Meredith, Carthage, Mo. Trace Holder. — This invention is designed to provide a trace holder adapted to be readily applied to whiffletrees of various vehicles, and capable of effectually preventing a trace from slipping off the end of a whiffletree. The trace holder, which will not deface the trace or wear the whiffletree, is equipped with means for holding the loose or free end of the trace when the latter is engaged at an intermediate point with the whiffletree. The device is constructed of a single piece of wire, and includes a longitudinal loop having an enlarged outer trace receiving portion and provided substantially L-shaped sides or arms, a transversely disposed loop extending rearwardly from the inner end of the longitudinal loop, and upper and lower eyes connecting the inner ends of the loops, the terminals of the wire being coiled to form one of the said eyes through which a pivot passes.

Frank Stone, Bradford, Pa. Trolley.—The object of this invention is to provide a trolley adapted to be readily applied to a trolley pole as an attachment, and is capable of preventing the trolley wheel from leaving the trolley wire and will serve to reduce the wear of the wheel to a minimum. The device is provided with a guard arranged close to the trolley wheel to protect the same from crossed wires, and yieldable outwardly so as not to interfere with the free movement of the trolley wheel. The attachment is composed of a trolley head, an angular bracket pivoted to the trolley head, a coiled spring interposed between the trolley head and the bracket, a fork journaled in the bracket and adapted to receive a trolley wheel, and a spring connected with the bracket and with the fork for yieldably centering the latter.

Marshal A. Stubbs, Dillon, S. C. Fertilizer Distributer. — This invention is designed particularly for making the second and subsequent applications of fertilizer to cotton, corn and other plants. The machine is adapted to straddle a row of plants and deliver the fertilizer close to the same at opposite sides thereof when the latter are of a size to admit of the machine traveling over them, and when the plants become too tall to have the fertilizer delivered to them in this manner, will operate between the rows and discharge the fertilizer to the opposite rows. The machine will also plow down the ridge between the rows and throw the soil towards the plants so as to cover the fertilizer. The fertilizer distributer includes a plow beam having cultivating devices and supported by wheels, a hopper mounted on the plow beam and provided at opposite sides with outlets, and spouts depending from the outlets and equipped with pivotally mounted lower sections arranged to swing transversely and adapted to be adjusted to extend them either inwardly or outwardly to discharge the fertilizer at opposite sides of the row, or to deliver the fertilizer to the plants of two opposits rows.

Charles Reiss and Frank B. Loufek, Mt. Auburn, Iowa. Harrow Attachment for Planters.—The harrow attachment of this invention is equipped with a plurality of harrow sections, and is adjustable to enable it to be attached to any corn or other planter, and also to vary the distance between the harrow sections to suit the width of the rows. The harrow attachment comprises spaced supports having means for mounting them on a machine at the opposite sides thereof, harrow sections, coupling members including rearwardly extending arms secured to the harrow sections, forwardly extending arms pivotally connected with the supports, and upwardly extending arms having loops, an arched connecting member extending through the loops and pivoted to the upwardly extending arms, and operating mechanism connected with the arched member for simultaneously raising and lowering the harrow sections.

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FOR SALE—U.S. Patent No. 1,017,536. Silencer for internal combustion engines. Especially adapted for motor boats. It stops the noise without back pressure. Address, M. F. Graydon, Trenton, Ont., Canada. nov

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FOR SALE—Patents for hot water turbine. One state right sold for cash $7,000 and one-fifth interest in company. All or part. Address, Paul Danckwardt, R. R. No. 2, Dardanelle, Ark. oct

FOR SALE—Would sell for cash 40 per cent interest in automatic chemical fire extinguisher. Patented May 21, 1912, Serial No. 640,282. Address, J. D. Farr, R. R. Elberton, Ga. oct

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FOR SALE—Patent No. 1,006,507, dated Oct. 24, 1911. Expansion Joint. Expands freely under high pressure with unlimited traverse. Been in practical use since September 1910. Address, C. R. Speight, Burgaw, N. C. mar-13

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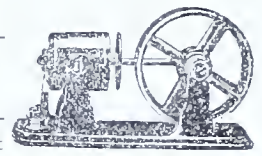
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WASHINGTON, D. C., SEPTEMBER 1, 1912.

STRIKING DIFFERENCES BETWEEN THE PATENT LAWS OF THE UNITED STATES AND FOREIGN COUNTRIES.

There are no less than seventy-one of the countries of the world, including with but one or two exceptions every country that we recognize as a part of the civilized earth, which have recognized the importance of encouraging the development of the liberal arts by adopting laws under which an inventor may, as a matter of right, secure protection for a limited term for any new or useful invention capable of industrial use. Among the countries which have patent laws are included practically all English-speaking countries. Hardly a colony of Great Britain, whatever its size or importance—Hongkong as well as Canada, St. Helena as well as Australia—but has its patent laws. Besides the countries which have general laws providing for the grant of patents, a number of other countries protect inventions by special legislative or crown grants. Few subjects have received from legislators throughout the civilized world more attention than that of patent protection. As might be expected, the patent laws of different countries vary in many particulars from each other and from the United States law; though the differences are in some respects less wide than they were a few years ago.

1. PRELIMINARY EXAMINATION.

Perhaps the most important particular in which the United States law differs from the laws of the majority of foreign countries is in the preliminary examination. In many of the foreign countries, patents are granted on applications without examination into the novelty of the invention, patents being issued for inventions which are notoriously old and in common use as readily as for inventions which are new. Necessarily the patents granted for inventions which are not new, are invalid and worthless. This system of granting patents has its earnest advocates, for it is to be admitted that by this method there is no opportunity for the refusal of a patent for a meritorious invention, while it is undoubtedly true that in some cases patents have been refused for important inventions under the preliminary examination system, and the latter also involves more delay. Nevertheless, we believe the present patent laws of the United States, in so far as they provide for the examination of all applications for patents and for the grant of a patent only in case the invention is new and useful, should not be changed. This opinion is strengthened by the fact that the preliminary examination system, on the same general plan as provided for in the United States law, has so far commended itself to foreign legislators that it has been adopted in many important countries; notably Austria, Canada, Denmark, Great Britain, Germany, Sweden, Japan, Russia, and Sweden.

In this connection should be mentioned a system which, though not in practical operation in Europe, is advocated by many jurists. It is a combination of the registration and preliminary examination systems by issuing patents to all applicants, affixing to the patents the results of the preliminary examination such as is now made in this country. It is claimed that the advantages of both systems would thus be obtained. The inventor would not be prevented from obtaining protection for his actual invention in the terms in which he chooses to present it, and the public would be warned as to the actual extent of that invention by the disclosure of the state of the art. This system is in vogue in Great Britain.

2. WHAT CONSTITUTES NOVELTY.

As to what constitutes patentable novelty, foreign patent laws differ widely from the United States law. Under the United States law an invention which has been disclosed to the public and has even been in public use or on sale, may be patented, provided the application is made within two years from the date on which it was first disclosed to the public in a printed publication, or first put into public use or offered for sale. Under the foreign laws, generally any disclosure of the invention to the public of the country prior to the date of the application for patent, whether by disclosure in a printed publication, or by use in public, is sufficient to prevent the grant in the countries in which the system of preliminary examination prevails, and in countries in which patents are granted on application without such examination, it is fatal to the validity of the patent. The law of France is so strict in this regard that the publication in print of a description of an invention in the United States the day before the application is filed in France is sufficient to invalidate a patent granted in France on such application.

3. INVENTION EXCLUDED FROM PROTECTION.

Under the United States law, no class of useful inventions is excluded from protection, and the same is true of Great Britain and British colonies generally, but many foreign countries exclude from protection one or more classes of inventions. Germany, France, Austria, Hungary, Japan, Denmark, Norway, Sweden, Russia, and a number of other countries exclude from protection inventions relating to medicines. In many countries patents are refused on foods, chemical products and inventions relating to war material.

4. THE DATE OF THE PATENT.

In many foreign countries the patent dates from the date of the application and not from the date of the grant as in the United States. In certain countries in which the application is subjected to delay for examination, the result is that the effective term of the protection is less than the normal term. Under such laws there is no advantage to be gained by causing unnecessary delay in the prosecution of the application. The United States law was not designed to encourage delays in the prosecutions of applications, but the law does undoubtedly make it possible to delay the issuance of the patent and may result in extending the patent monopoly for a longer term than was ever intended or contemplated, since however long the application may remain in the Patent Office—and some applications for important inventions have remained there ten or more years—the patent when granted secures the control of the invention for the full term of seventeen years from the date of the grant.

5. SECOND PATENT GRANTED TO FIRST INVENTOR.

The United States laws differ from the laws of every foreign country, with the exception of Canada, in providing means to determine the rights of the real inventor. It not infrequently happens that a patent is granted to an applicant who claims to be entitled thereto as the first and original inventor, and later another makes application for a patent for the same invention, and in interference proceedings declared by the Patent Office it is adjudged that he, (the second applicant) and not the first applicant, is in fact the first and original inventor, and that the person to whom the patent was granted was either not an inventor, or being the inventor of the invention in question, was not the *first* inventor. In such a case, while the patent already granted cannot be revoked, there being no provision in the United States law for the revocation of a patent once granted, the Commissioner of Patents may, under the law, grant a second patent for the same invention covered by the patent already issued, to a later applicant, under Section 4904 of the Revised Statutes. The patent so granted to the later applicant is necessarily granted for the full term of seventeen years.

As stated, Canada is the only other country which provides simple ways and means for determining the rights of the first inventor. While foreign countries generally provide that the real inventor shall not be deprived of his right to his patent by reason of the fact that a patent has been issued to another not legally entitled thereto, still there is no procedure similar to the interference proceedings of the United States patent practice by which the later applicant, if the first inventor, may obtain his rights.

6. PATENT FEES.

Under the United States law the fee payable for the examination of the application is $15 and for the issuance of the patent $20, and these are all the fees required to keep the patent in force throughout the term for which it is granted. In foreign countries, and this is true of practically all countries which have patent laws, the fees payable prior to the issuance of the patent keep the patent in force for from one to six years only, and thereafter further fees or taxes must be paid or the patent ceases to be in force. In some countries the annual fee is increased each year and in the aggregate is quite a tax upon the patentee. This is claimed by some to be advantageous because it effectually disposes of the patents which have been granted for inventions which are impracticable or useless, but the adoption of a similar system of taxation in this country, would undoubtedly result in discouraging invention, and no one has ever suggested extending this system to the United States.

7. WORKING OF PATENTED INVENTIONS.

The requirement is found in the patent laws of most foreign countries that an invention which is the subject of a patent must be worked, that is, be manufactured on a commercial scale in the country in which the patent is granted on pain of forfeiture of the patent. The purpose of this requirement is primarily to benefit the interests of the country directly by requiring the patentee to carry on the manufacture of his invention in this country, as well as to prevent the injury to other manufacturers of articles of the same class, which might arise from the introduction of articles embodying the invention made in foreign countries to compete upon the market with the productions of home manufacturers, or which might arise from a refusal to supply the home public with the patented article while the needs of foreign countries were being fully supplied.

It has been proposed to engraft on the United States patent law a compulsory license provision after the fourth year of the patent, but there has been much opposition voiced to this change in the law. We commented on this in the August AGE.

THE OLDFIELD PATENT BILL.

Limiting Term of Patent by Date of Application.

We have already discussed certain sections of this measure pending before Congress. It also contains the following provision:

"Every patent shall contain a short title or description of the invention or discovery correctly indicating its nature and design, and shall have annexed thereto and made a part thereof a copy of the specification, claims, and drawings of the application therefor, to which it shall refer for the particulars of the invention or discovery, and contain a grant to the patentee, his heirs or assigns, of the exclusive right to make, use, and vend the invention or discovery throughout the United States and all Territories and possessions under the jurisdiction thereof, for the term of seventeen years. But every patent granted for an invention shall be so limited as to expire nineteen years from the date of filing, in this country, of the application upon which the patent was granted, exclusive of the time actually consumed by the Patent Office or the courts in considering the application, and where the application has been involved in interference, of the actual time in which it has been so involved, and in no case shall the patent be in force more than seventeen years."

This section embodies the following changes from the existing law:

The provision requiring the patent to be limited so as to expire nineteen years from the date of filing, in this country, of the application upon which the patent was granted, exclusive of the time actually consumed by the Patent Office or the courts in considering the application, and also the actual time in which the application has been involved in interference. It is further stipulated that in no case shall the patent be in force for more than seventeen years.

The object of this provision of the law is to prevent an applicant keeping his case pending in the Patent Office for long periods of time during which the application is amended and the claims broadened to cover improvements, which are made from time to time, with the result that when the patent issues many years after the date of filing, it is found to embrace claims of such scope as to dominate machines and devices already upon the market. It is well known that the Selden patent, under which the automobile trust worked for many years, was held in the Patent Office a period of approximately fourteen years. The same was true of the Berliner patent. Under this new provision of the law there will be no objection to an applicant for a patent keeping his case pending in the Patent Office, but it will be to his advantage to have the case allowed as quickly as possible, because every day's delay incurred through his own fault, will shorten the term of his patent.

We do not believe that any serious objection can be made to this proposed amendment, which tends to cure an evil in the practice which admittedly exists, and we do not believe that it would harm any worthy applicant for a patent. Two years in which to prosecute an application for patent, outside of the time in which the application may be involved in interference, is ample.

New Wireless Discovery.

During recent experiments in Tripoli by Marconi, the discovery was made that the sand acted as a conductor of wireless messages. These can be sent over the desert without the usual masts. Instead of poles, wire is laid on the sand, in the direction in which the message is to be sent. It goes and is received without any interruption, just as if the usual system were used. This is made possible by the fact that sand is an absolute non-conductor, so that electric waves are not disturbed. The sand being dry, neither rain nor tempest can affect the waves.

Everyone knows the difficulties of setting up, especially in time of war, a wireless station with masts. These can be seen by any enemy from a distance, and indicate the exact location of the camp. They can be dispensed with in sandy regions, a small and simple case sufficing to send the messages. Another advantage of the discovery is that the enemy cannot interrupt messages when the register of the air waves has been changed. It would be impossible for outsiders to guess the register, and thus a long step in advance is taken.

Protection Against Burglars.

An invention of interest to sportsmen consists of an electric flash lamp fixed directly under the front sight of the gun or revolver, thus enabling wild game hunters to continue their sport by night. The invention also commends itself in a more general way, for use against burglars. The operator of the device can with the aid of the flash determine the exact position of the object he intends to fire at, while he himself remains enveloped in darkness. If the object should be an animal, the flash would dazzle and momentarily terrify it. Another advantage is that two lines, one descending from the top of the lens just under the muzzle and intersecting another horizontal to the reflector's sphere, enable the operator to hit the object without taking aim, for wherever the flash throws the mark, the bullet will hit within half an inch.

Cooling Boiler Rooms.

The new motor ship Selandia, the property of the East Asiatic Company of Copenhagen, has proved herself so successful that her owners have ordered two more motor ships, each of 10,000 tons. It is thus evident that the big, coaless, oil-driven ship has gotten far beyond the experimental stage and has come to stay, although not more than a year or so ago internal combustion engines were considered suitable only for small river vessels and yachts. When oil is used for power the ship by which it is driven has no funnel, and of course no boilers or coal bunkers. The petroleum is stored in tanks along the double bottom of the vessel and pumped to the motors. The Selandia is 370 feet long between the perpendiculars, 53 feet in breadth, and 30 feet in depth molded to the upper deck. Her tanks hold 900 tons of oil. The recent coal crises in this country and abroad have revived interest in oil-driven ships, and the success in this instance will lead to the construction of other boats.

Diamonds from Gas.

The old fairy tale about the girl from whose mouth, when opened, came jewels, has been found to be something more than a figment of the imagination. It is well known that the carbon that is one of the constituents of carbonic acid gas, is the substance that when purified and crystallized is a diamond. With each breath we exhale, we thus expel from the body a substance that might be transformed without chemical change into this most valuable of precious stones. A method of effecting this transformation has been discovered by a German, Dr. Werner von Bolten. The process is based on the decomposition of ordinary illuminating gas by mercury amalgam, whereby the carbon in the gas is crystallized into diamonds. The diamonds are said to be tiny, but their size may be increased by introducing small particles of diamond dust, to serve as centers of crystallization. Even so, the diamonds manufactured are not of commercial size.

This would seem to be a new method, but it should not be forgotten that the French scientist, Moisson, manufactured diamonds several years ago. He subjected carbon, in the form of sugar, to the intense heat of an electric furnace, which liquefied the carbon. Fragments of iron were melted with the carbon, and the liquid was kept at white heat (about 3,000 degrees C.) for several minutes. The crucible containing the molten mass was then seized with a pair of iron tongs and plunged suddenly into a vessel filled with cold water. Moisson says that the first time he made this experiment, he felt some apprehension, which was quite natural. There were, however, no unpleasant results. When the resulting mass of metal was dissolved in boiling hydrochloric acid, fragments of carbon remained; and when these were treated with various acids, there remained finally small crystalline masses that responded to the tests for diamonds.

The principle involved is dependent on the fact that iron has the unusual property of expanding as it solidifies, like water. Therefore when the exterior of a molten mass of iron is cooled suddenly, as by plunging it into the water, the subsequent solidification of the interior of the mass brings about a condition of terrific internal strain or pressure. Every one knows how water freezing in a pipe tends to burst the latter. The solidifying iron exerts huge pressure on the same principle. This pressure is brought to bear on drops of molten carbon within the substance of the iron, and the carbon under these conditions solidifies not as ordinary graphite, but as a diamond.

Professor Moisson had noted that iron is always found in the ash of natural diamonds, and that the same metal is present in considerable quantities in the characteristic blue clay of the natural diamond beds. It was this that gave him a clue to the above method. The diamonds made however, serve only for scientific, and not for commercial purposes. Perhaps the German method may ultimately prove more successful in this direction. But even if it does, it is not likely that the price of the real diamonds will drop. Artificial rubies are now made in abundance, and can be told from the real ones only by expert microscopical examination. But the fact that they can be told at all, keeps up the price of the natural gems.

Novelties in Slot Machines.

The ubiquitous slot machine is being adapted for new purposes. The boot blacker was described in these columns some months ago. Trolley cars in California are being equipped with a similar device to sell newspapers. It consists of a metal container, which holds a number of copies of each of the morning papers. These can be secured by dropping the price in the slot and pressing a lever. As the prices vary from one cent to five, a different slot is used for each compartment. The machine rejects light weight and worn coins, which are returned to the depositor. These devices do away with the news agents, and save a large amount in salaries.

In another part of the hustling West, in Portland, Oregon, is made an automatic machine for changing coins. Any coin, from a ten cent piece to a silver dollar, may be deposited in a slot at the top of the machine. The handle is then turned, like other machines of this character, and the same amount of money, in small change, is dropped into the cup placed to receive it.

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Liquids by means of ultra violet rays, Apparatus for sterilizing.....P. G. Triquet
Liquids in measured quantities, Apparatus for discharging.....C. P. Beckwith
Loom, Weft replenishing.....E. H. Ryon
Looms, Reed and beating up mechanism for.....R. Fornworth et al.
Lubricator.....I. Larsen
Mail box.....R. L. Davis
Mailing wrapper.....H. J. Wyatt
Mains, pipes, &c., Apparatus for scraping and cleaning water.....R. A. Adamson
Match making machine.....S. E. Rahe
Mechanical motor G. W. Bunting
Memorandum pad support and lighting device, Combined.....O. Knoerzer et al.
Metallic screen..H. W. and W. W. Watson
Milk can.....C. B. Peoples et al.
Milk, cream, &c., Machine for homogenizing.....F. P. Cribbins
Miter box.....R. L. Macey
Mold.....W. Binning
Mold.....H. W. Strietelmeier
Motor.....A. J. Shinn
Motor control system.....H. A. Steen
Motor control system.....H. W. Cheney
Mowing machine.....M. E. Thomas
Musical instrument.....T. P. Brown
Nail driving device.....F. A. Devereaux
Nailing machine.....A. D. Elliott
Napping machine drum, Planetary.....H. S. Greene
Nut lock.....G. O. Douthit
Nutcracker.....A. M. Carlsen
Oil burner.....R. B. McLellan
Orange boxing device.....G. T. Stamm
Package tiers, Socket for connecting.....B. F. Inge
Packaging machine.....F. W. Lee
Paper bag machine.....J. D. King et al.
Paper box, Folding.....J. T. Ferres
Papering machine.....J. W. McCrary
Pen, Fountain.....G. H. Carter
Phonograph record cabinets, Filling block for.....E. Pooler
Phonograph records, Apparatus for making.....J. A. Whitman
Photographic aparatus.....H. Lill
Photoprinting frame.....R. Robinson
Piling, Sheet.....A. R. Archer
Planter.....R. Allen
Planters, Planting device for corn.....H. F. Ruel et al.
Plow.....P. Clancy
Plow, Gang and motor.....E. B. Sellard
Plow gearing, Motor driven..E. B. Sellard
Plow harrow attachment..A. S. Achenbach
Plow, Rotary.....J. Peterson
Pocket, Watch.....E. R. Pennebaker
Pool register.....E. F. Manchester
Post hole digger.....S. E. Broomall
Potato vine arranger.....J. P. Manson
Pounding-up machine.....C. E. Shattuck
Power transmuter, Current....N. R. Smith
Precious metals, Apparatus for the recovery of.....H. N. Potter
Press.....E. G. Jegge
Press.....A. Bates
Press for extracting liquid from materials.....A. S. Mackenzie
Printing machine, Wrapping paper.....S. H. Pine et al.
Protector inserting machine..G. A. Ambler
Printing press inking apparatus.....W. K. Horgman
Printing presses, Adjustable support for inking rollers of.....C. H. Brett
Pulling over machine.....R. F. McFeely
Pulling over machine.....O. Ashton
Pump, Lubricating oil.....R. Klinger
Punches and like master of metal surfaces, Machine for cutting..J. C. Grant et al.
Push bar.....J. W. Bodie
Rail joint.....W. D. Williams
Rail joint F. L. Strouse
Rail joint.....W. E. Weekes
Rail joint.....W. S. Dodson
Railway signaling system...L. H. Thullen
Railway tie and clamp.....C. L. Inman
Railway tie plate.....J. S. Fox
Railway trains, System of operating steam.....G. H. Lutz
Rakes, Pusher attachment for sweep.....P. J. Englund
Range finder.....A. A. Michelson
Rat trap.....E. K. Schwing
Receptacles, Manufacturing (Reissue).....W. R. Comings
Refrigerating device.....J. A. Anderson
Refrigerator.....E. D. Lochner
Refrigerator car.....C. A. Moore
Refrigerator car.....S. Mason
Registering apparatus.....H. Hollerith
Relay and circuits therefor..R. H. Manson
Relay, Polarized.....W. S. Henry
Releasing device.....J. Irwin
Revolving case and account register.....A. E. Trenton
Rheostat, Liquid.....H. A. Steen
Rims, Manufacture of wire spoked.....J. V. Pugh
Road sacrifier.....N. De Wind
Rubber, Curing india.....R. Derry
Rug stiffener.....W. A. Scott
Sad iron stand.....O. H. Frank
Safety pin.....J. H. Robinson
Sanding machine.....J. W. Krooze
Sardine can.....G. W. Weber
Sash holder.....W. A. Heil
Sash lock and antirattler.....J. De Mars
Sawing and trimming machine with router and jig saw attachment.....H. G. Miller
Scaffold support.....E. M. and D. F. Cavanagh
Scale, Weighing.....L. C. Wetzel
Scrubbing machine.....R. L. Sessom
Scrubbing machine.....A. DeGraw
Scythe.....H. E. Scott
Seal plug.....J. B. Kitts, Sr.
Seal, Snap (2 pats.).....E. J. Brooks
Seam and making chain stitches, Chain stitch.....F. La Chappelle
Seams, Forming chain stitch.....C. P. Holmes
Separating case.....C. H. Middaugh
Separators, Feed and distributing means for.....A. J. Arbuckle
Service pipe for water storage systems, &c.....W. H. Allen
Sewed articles, Taped seam for.....E. B. Allen
Sewing machine (2 pats.).....F. J. Freese
Sewing machine.....G. E. Warren
Sewing machine (3 pats.)....C. P. Holmes
Sewing machine.....W. E. Stone
Sewing machine attachment, Chain stitch.....F. La Chappelle
Sewing machine, Buttonhole.....J. W. Connors
Sewing machine, Buttonhole....J. Kiewicz
Sewing machine buttonhole attachment.....E. J. Boyler et al.
Sewing machine grooving device, Shoe.....F. E. Beckman
Sewing machine looper mechanism.....H. Briggs
Sewing machine presser foot mechanism..J. B. Hadaway
Sewing machine tension device.....W. C. Meyer
Sewing machine tension mechanism.....W. C. Meyer
Sewing machine welt guide, Shoe.....A. Eppler
Shade or globe holder.....L. W. Young
Shafting, Flexible.....J. D. Scovel
Shank stiffener.....E. E. Winkley
Sharpening implement, Tool..G. H. Johnson
Sheet metal can.....D. Bloom
Shoe.....M. Brock
Shoe beating machine.....J. Housholder
Shoe beating machine.....O. Ashton
Shoe finishing and other machine.....A. Bates
Shoe ironing apparatus.....G. S. Covell
Shoe machine jack.....R. F. McFeely
Shoe shaping machine.....G. M. Carnes
Shoe support.....T. K. Keith
Shoe uppers, Machine for beating out.....W. Gordon
Shoes, Making.....A. H. Prenzel
Sidewalk cover.....F. Kees
Sidewalk light.....F. L. Henghes
Sieve.....M. McIlvaine
Sign.....C. W. Smith
Sign.....E. Rambeck
Signal indicator, Train air..T. F. Bellhouse
Signaling mechanism, Train.....H. and L. R. Jarvis
Silo (3 pats.).....A. O. Hubbard
Soldering apparatus, Metal...A. R. Braden
Sole channeling tool.....F. E. Bertrand
Sole machine.....F. E. Bertrand
Soles, Machine for operating on shoe (2 pats.).....F. H. Perry
Soles, Machine for operating upon.....R. C. Simmons
Soles, Machine for operating upon.....W. Chaput
Speculum.....D. H. Palmer
Soles, Machine for operating upon.....F. E. Bertrand
Soles, Machine for operating upon shoe.....L. A. Casgrain
Spinning, doubling, and twisting machine.....S. Z de Ferranti
Spring wheel.....A. R. McEntire
Spring wheel.....J. H. Weldon
Spring wheel.....H. M. Strawn
Sprinkler head, Automatic.....W. B. Hammond
Stacker.....R. F. Meyers
Stamp affixing machine (Reissue).....S. B. White
Stanchion, Cattle.....G. Gleason
Steam trap.....T. R. Whittaker et al
Steel bars and the like, Formation of.....W. K. Riley
Stencil holder, Decorator's...G. Weide, Sr.
Stitches, Forming chain.....C. P. Holmes
Stop plug protecting cap.....K. E. Cunningham
Store service apparatus.....C. J. Miller
Street indicator.....C. H. Vickery
Street sweepers, Dust collecting tank for..E. S. Estlin
Switch.....A. J. Logain
Syringe with electrical attachment.....L. R. Saunders
Table leg, Extensible.....J. T. Gregory
Tabulating systems, Apparatus for use in..H. Hollerith
Tack feeding mechanism.....R. F. McFeely
Tack pulling and driving machine.....J. B. Hadaway
Tack pulling machine.....J. B. Hadaway
Tacking mechanism.....T. K. Keith
Target throwing device.....S. A. Huntley
Tea brewing apparatus.....C. A. Sherman
Telegraph system, Multiplex.....J. F. D. Hoge
Telegraphic instrument.....C. C. Ferguson
Telephone installation.....H. O. Kabitzsch
Telephone instrument.....W. P. Stunz
Telephone stand.....H. W. Schussler
Telephone system.....E. R. Corwin
Telephonic instrument, including transmitters.....W. P. Stuntz
Telephony.....E. R. Corwin
Thermostatic time element device.....N. Wilkinson
Ticket pin.....I. Kaufman
Tile making machine.....F. Latulip
Tire, Resilient vehicle.....E. M. Green
Tire, Vehicle.....L. Quintal
Tobacco, caddies, Forming plug..H. J. Penn
Tobacco container, Plug.....H. J. Penn
Toilet, Railway.....H. O. Johnson et al.
Tongue, Adjustable plow.....E. C. Bank
Torch, Gasoline blow.....J. E. Fliteroft
Toy.....E. Turner
Toy pistol.....P. T. Pederson
Track sanding device...G. C. Miller et al.
Train brake.....J. G. Buchanan et al.
Treeing machine (2 pats.)....J. S. Hansen
Trimming machine.....O. Ashton
Trimming machine.....F. H. Perry
Trolley catcher.....I. R. Ricketts
Trolley wheel.....J. S. McCabe
Trolley wire cleaning device.....N. Malmgren et al.
Truck for hydraulic presses, Feeding.....W. P. Bettendorf
Truck, Four wheel.....H. E. Doerr
Trucks, Means for loading and unloading.....R. L. Morgan
Turbine (2 pats.).....W. Robinson
Turbine, Steam.....J. Brown et al.
Turbo construction.....E. Mattman
Tying machine, Knot.....W. A. Smith
Typewriter line spacing.....J. Alexander
Typewriting machine.....W. J. Barron
Typewriting machine.....A. T. Brown
Typewriting machine.....A. W. Clauder
Valve.....G. H. Gilman
Valve controling mechanism, Thermostatic.....N. Wise
Valve, Distributing.....O. E. Nilsen
Vamp marking machine.....C. H. Bayley
Vamp pulling apparatus.....G. J. Gorsuch
Vault, Burial.....M. Clarkson
Vehicle runner, Detachable...G. B. Ambler
Vehicle running gear.....F. I. D. Hagenah
Vehicle steering gear.....H. Schumacher
Vehicle wheel.....A. F. Priest
Vessel raising device, Sunken submarine.....H. Aronsen
Vise (Reissue)...R. W. and L. H. Bateman
Wagon, Motor.....H. M. Kinney
Washing machine.....C. Pinoli
Water closet seat attachment.....C. De Quillfeldt
Water distributing system, High pressure.....G. W. Jackson
Water heater for shaving outfits.....C. A. Nearman
Water motor, Impact.....W. A. Doble
Water purifying apparatus..D. L. Winters
Water tube sectional boiler.....H. Barlach
Welt butting machine (2 pats.).....G. L. Rollins
Welt guide.....P. A. Coupal
Welt guide.....J. T. McIsaac
Wheel and carrying chair, Combination.....T. B. Baldwin
Wheel rim, Detachable.....J. J. Burney
Wheel support.....M. G. Bunnel
Wheels, Protective covering for pneumatic tired.....L. J. Tetlow
Winding mechanism, Line..W. N. Cavileer
Window cleaner....F. E. Whitaker et al.
Window cleaning device....E. W. Sharkey
Wire stretcher.....E. D. Jones
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Issued July 2, 1912.

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Abrading cylinder.....F. L. Lane
Account register.....S. W. Crane
Acetylene tetrachlorids, Producing.....G. Ornstein
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Advertising cabinet.....L. H. Baker
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Aluminum nitrid, Manufacturing.....O. Serpek
Aluminum or alloy containing aluminum, Direct nickeling of....M. Chirade et al.
Ammonia, Producing.....S. Peacock
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Animal and insect exterminator, Electric.....C. C. Tuch
Apron.....L. Baum
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Asphalt blocks, slabs, &c., Manufacture of.....C. Artmann
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Bag frame.....F. A. Fuller
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Balloon, Automatically deformable.....A. Ranza
Barrel heating and drying apparatus.....T. Johnson
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Bed, Couch.....C. H. Young
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Bedstead corner fastening.....O. H. Warner et al.
Bell.....D. C. Horner
Bell, Electric.....A. A. Ziegler
Belt hook.....D. T. Graham
Belt stretcher.....J. N. McKee
Belts and the like, Device for testing the tension of.....A. W. Thompson
Bill clip.....A. F. Staples
Billard counter.....F. C. Hobbs
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Block signaling system and safety apparatus.....M. Conrad
Blocks, Manufacturing artificial.....M. P. Andrews
Bobbin boring machine.....N. Demers
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Bolt head trimming machine..R. H. Smith
Bolt holder.....W. J. Neal
Boot and shoe making.....F. N. Ward
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Bottle, Non-refillable.....G. V. Doherty
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Brace.....L. Boggan
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Bread cutter.....T. W. Forster
Brick cleaning machine.....E. T. Cole
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Brooder.....G. . Lee
Brush.....S. D. Purdy
Brush, Fountain blacking....R. T. Overton
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Brush, Washable.....M. Reinstein
Bundling machine.....D. B. Williams
Burglar alarm.....G. De Giovanni
Burglar alarm and lock for windows.....E. C. Kahn
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Bushing, Adjustable.....L. A. Alexander
Button, Snap.....M. E. E. Paetzold
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Calculating machine.....R. E. Wageley
Calculating machine..W. P. Qnentell et al.
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Can body blanks, Feed mechanism for.....J. W. Dixon
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Candy cutting machine....J. T. Nohberger
Car bolster.....J. A. Lamont
Car construction.....J. C. Barber
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Car coupling, Automatic.....P. C. Brown
Car door device.....W. E. Haley
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Carbureter, Spray.....G. Plumm
Carousel, Water.....A. C. Bail
Carrier.....A. L. Anderson
Carton.....G. M. Voris
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Casket, Burial.....J. M. Arnold
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Caster.....F. E. Thompsou
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Catnip balls, Making.....W. E. Smith
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Chain, Conveyer.....W. M. Wilkin
Chain fabric, Ornamental.....F. Doppenschmidt
Chain or cord coupling.....A. A. Tirrill
Chair, ironing-board, and drying rack, Combined.....G. H. and E. J. Hartmann
Chandelier.....S. G. Camp
Check controlled apparatus....Z. T. Pointer
Cheese hoop.....E. C. Damrow
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Churn operating mechanism..W. H. Colman
Chute.....J. W. Ogden
Cigar box.....J. J. Planco
Circuit breaker system.....W. M. Scott
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Clock and talking machine, Combined.....F. Seelau
Cloth package.....A. T. Dorsey
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Clutch, Elevator.....S. Sanna
Clutch, Fluid.....J. C. Carpenter
Coal leveling apparatus.....J. M. B. Reis
Coating, Apparatus for forming.....E. W. Sample et al.
Coats, Producing.....F. A. Antoni
Cock, Blow-off.....W. W. Hoffman
Cock, Gage.....J. V. Scaife
Coffee-pot.....A. H. S. Swan
Coloring matter, Producing organic.....M. Wechsler
Column setting device.....J. E. Conzelman
Comb.....S. C. Stroup
Compass, Beam.....F. Machava
Concentrator, Hydraulic.....T. A. Garred
Concrete construction (5 pats.).....J. E. Conzelman
Concrete construction.....A. J. Meier
Concrete reservoir.....J. E. Conzelman
Concrete slabs, System of reinforcement for.....J. E. Conzelman
Control system.....H. A. Steen
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Conveyer for metal rods.....V. E. Edwards et al.
Conveyer, Portable.....P. L. Wooster
Coop, Foldable chicken....T. A. Mehringer
Cord or rope making machine.....T. W. Norman
Core for resilient objects.....W. Barbour
Cork assorting machine.....J. A. Snyder
Corn and cane header.....O. Schubert
Corset.....A. Ray
Corset attachment.....A. J. Hensley
Cotton chopper.....R. Hamilton
Cotton extracting and cleaning machine.....J. E. Mitchell
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Cranes and hoists, Load brake for.....C. H. Tucker
Crusher.....R. C. Newhouse
Crusher or pulverizer.....M. J. Williams
Crutches, Antislipping attachment for.....E. Conrad
Cue, Automatic chalking..W. C. Vasbinder
Cultivator attachment.....J. A. Janosek
Cultivator, Disk.....A. Brigden
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Cutter for forming irregular surfaces.....C. J. Boyce
Cycle handle, Motor..W. F. Boast et al.
Cylinder, Toothed.....F. C. Stevens
Dental appliance.....W. F. Davison
Dental spindles, Guard sleeve for.....J. H. Abbott
Derrick.....F. J. Blake
Derrick.....J. M. Kane
Detachable wheel.....J. V. Pugh
Digester, Combination.....A. F. Richter
Dipper-body, Cast metal..W. S. McKee et al
Dish-washing machine.....J. B. Laplace
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Door frame, Hollow metal..A. J. Ellis et al
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Door switch.....E. Anderson
Door track and hanger construction.....J. W. Rumsey
Dough cutter.....E. W. Carnes
Dowel feeding device.....H. A. Russell
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Draft gear.....J. F. Courson
Drafting instrument....W. C. Pocklington
Drag.....M. J. Hill
Drawing machine, Curve..F. S. Woodward
Drawing purposes, Formation of the ends of tubes for.....H. Higgin
Drawing sharp edges on metallic bodies, Machine for.....H. P. Hanson
Drinking cup or goblet, Trick.....J. P. Anagnoston
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Driving at uniform speeds, Mechanism for.....D. Higham
Driving mechanism.....W. H. George
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Drummer's pedal.....J. D. Tobias
Dust and grain separator.....F. H. Day
Elastic fabric (3 pats.).....W. Kops
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Electric furnace for smelting and reduction of ore.....H. B. Lorentzen
Electric iron.....W. Heaviside
Electric light bracket, Extensible..F. L. Ellis
Electric machine, Dynamo...B. G. Lamme
Electric machine, Dynamo.....V. G. Apple
Electric meter.....R. A. Willson
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Electric push switch.....E. Anderson
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Electrical controlling mechanism.....C. G. Lohay
Electrical switch.....O. S. Walker
Electromotive device.....C. F. Burgess
Embalming apparatus.....L. McCoy
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Emulsifier or mixer, Centrifugal.....W. Richmand
Engine primer, Gasoline.....E. Silver
Engine safety cranking attachment, Explosive.....F. Brayer et al.
Engines, Electric device for explosive.....C. T. Mason
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Envelop opener.....A. L. Palis
Equalizer.....D. W. McNatt
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Expansion bolt.....M. H. Paine
Extension table.....C. H. Johnsen
Eyeglass mounting, Finger piece.....D. V. Brown
Fan, Centrifugal.....R. Hancock
Fanning mill.....L. M. Anderson
Fanning mill and grading machine.....P. Schlund
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Feeder, Hog.....J. H. Thornburg
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Filing appliance.....W. H. Mnzzy
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Film developing, fixing, and washing apparatus.....F. F. Nye
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Fire alarm.....A. Guenette
Fire escape ladder.....J. M. Webster
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Fireproofing and other purposes, Composition of matter for.....G. A. Mesturino
Flame extinguisher.....D. Rondeau
Flame extinguisher.....O. Schmidt
Floors, Adjustable support for false work for.....P. Toelps
Fluid pressure brake.....W. V. Turner
Fluid pressure regulator.....C. C. Farmer
Flume or conduit, Metal..H. S. Williams
Flying machine.....P. Giordano
Flying machine.....H. Miller
Flying machine wing.....G. Korf
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Foot power mechanism.....R. W. Scott
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Fruit grading machine...R. D. Van Dnyne
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Game apparatus.....S. M. Witt
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Garment.....M. Miller et al.
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Gas burners, Electric ignition apparatus for.....H. Wasserzier
Gas cut off, Automatic.....J. Zaphiriadis
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Glue and making the same (Reissue).....F. G. Perkins
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Governor, Driven shaft.....L. R. Smith
Governor for interual combustion marine motors.....A. Winton
Governor, Pressure.....G. M. Richards
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Grain separator.....J. H. Murray
Grain separator.....J. K. White
Grapple.....C. B. Jones
Grass gathering machine.....F. E. Waite
Grease cup.....O. Zerk
Grid resistance.....F. L. Sessions
Gripping device for rods, tubes, &c.....M. H. Fischer
Gun.....N. H. Cloud, Jr.
Gun and range-finder, Combined multibarrel.....H. Maxim
Gun, Magazine.....F. D. Ubaldo
Hair pins, Manufacturing....G. S. Pollitz
Hammer, Magazine.....O. J. A. Smith
Hammock, Bed.....C. H. Young
Hammock or other support...I. E. Palmer
Hammock support, Folding..N. B. Simonds
Harvester, Beet.....N. G. Lawson
Harvester, Beet.....F. C. Kinder
Harvester, Corn.....E. Howe
Harvesting machine for beet roots, &c.....J. Massart
Hat conformator.....H. M. Darmstadter
Hat pin point protector.....M. Rosenthal
Hat pin point protector.....A. D. Gillespie
Hat retainer.....M. Mandak
Hay loader.....C. C. Reynolds
Hay rack.....O. L. Hays
Head gate.....E. T. Green
Headlight.....B. M. Sheets
Heating device for running water, Electric.....H. Lofquist
Heating installation, Hot water.....A. B. Reck
Heating system.....E. Thomson
Heel burnishing machines, Wax applying device for.....A. Beckman
Heel shaver.....I. J. Bazley
Hinge.....J. Soss
Hinge for screens.....H. Dittmer
Hook.....W. R. Smith
Horse overshoe, Antislipping..C. M. McClay
Horseshoe.....J. W. Shook
Horseshoe pattern holder..G. S. MacLeod
Hose coupling.....P. M. Reisik
Hose toe protector forming machine.....J. Ranz
Hot water heater, Instantaneous.....T. H. Stephenson
Hydrocarbon burner.....F. J. Nice
Ice creeper.....J. Czel
Incubator and brooder.....E. Ruegg
Indicators, Electrical recording apparatus for.....J. L. Zander
Inking roller.....H. C. Osborn
Inseam trimmer.....W. B. Keighley
Insulator.....H. Lange et al.
Interlocking mechanism.....F. Keiper
Internal combustion engine..G. S. Chapin
Ironing board.....W. B. Mitchell
Jack.....O. E. Tope
Jar holder.....M. A. Youngblood
Knitted trimming.....S. N. Goodman
Label, Poison bottle.....C. C. Bruner
Lacing guide for shoes, corsets, &c, Curved.....A. F. von Gellern
Lacing shoe uppers, Mechanism for automatically.....W. A. Smith
Ladder.....B. F. Forsyth
Ladder hook, Detachable.....H. M. Lucas
Lamp, Alcohol.....J. Rossman
Lamp and supporting bracket therefor, Electric.....G. Williams
Lamp bracket, Dirigible automobile.....C. H. Tiedemann
Lamp, Electric.....W. J. Lusted
Lamp, Electric arc.....J. C. Lincoln
Lamp globe holder.....T. J. Litle, Jr.
Lamp, Incandescent.....T. J. Litle, Jr.
Lamp, Incandescent electric...H. Gilmore
Lamp, Incandescent gas (2 pats.).....T. J. Litle, Jr.
Lamps, Lens for.....J. A. Stevens
Land reclaiming and current controlling means for slit-bearing streams.....J. M. Maher et al.
Lantern (2 pats.).....C. B. Carson
Lathe.....A. E. Newton
Lathe, Extension gap engine....W. L. Fay
Lathe turning attachment....C. L. Dickert
Lathes, Gearing for.....J. M. Tatman
Lead pigments, Apparatus for the production of.....J. W. Bailey
Letter box.....W. B. Benham
Level stand.....H. Stamps
Lever mechanism.....F. J. Hanrahan
Lifting jack.....I. H. Murdick et al.
Lighting system.....E. F. Wackwitz
Liquid fuel furnace.....G. Conti
Liquid separator, Centrifugal.....E. A. Forsberg
Liquids from materials containing the same, Machine for pressing....T. Franke
Log car stake.....J. B. Mainville
Loom, Swivel.....M. Semoff
Loom warp stop motion....H. W. Bracken
Loose leaf device.....M. B. Williams
Lorguette.....A. Spansy
Low water alarm.....A. G. Henke, Jr.
Luggage carrier.....J. Biderman
Machinery, Means for preventing or subduing noise in running.....J. Felbel
Magnesia, Manufacture of.....E. G. Zies
Mail lift.....P. J. Sheehan et al.
Mailing card, Postal.....J. Cameron
Mantles, Protective container for (2 pats.).....M. C. Whitaker
Marking clip, Clothes.....C. W. Fuller
Match box.....L. C. Dasbner
Mattress guard.....G. A. Mellon
Measuring and bottling liquids, Apparatus for.....J. A. Larsen
Measuring gage, Skirt length..S. T. Walton
Measuring draft animals for [illegible] for.....D. S. Brown
Measuring instrument, Recording [illegible].....T. Colgate
Mesothorium crystals, Making.....U. S. [illegible]
Metal bender.....A. J. Mc[illegible]
Metal cutting sears.....N. L. Edw[illegible]
Metals and alloys, Process and apparatus for extracting and refining...A. L. Gr[illegible]
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Metallic tie and rail fastener....F. Arellano
Meter testing service cut-out..T. E. Murray
Milking machine.....D. Alfven
Minnow, Artificial.....H. C. Royer
Mrror bracket, Adjustable....L. W. Lundin
Mitt, Ball catchers.....C. C. Burtt
Moistening and sealing device, Envelop.....V. Kubbin
Moistening device, Envelop....J. D. Young
Mold.....F. A. Feldkamp
Molding and loading tool, Combined.....J. R. Wilson
Mole trap.....J. C. Barker
Mop holder.....H. M. Sturgis
Mortising tool..R. B. and J. N. Garnett
Motor control.....W. Naumann
Motor starting switch, Electric.....C. D. Knight
Motors, Feed wire connection for electric.....G. J. Hartmann
Mower, Lawn.....L. Brown et al.
Musical instruments, Pneumatic action for.....G. P. S. Miller
Nail-puller and hatchet, Combined.....W. F. Hobbs
Neckbands, Making.....A. Lion
Net, Resistance.....F. Schniewindt
Nitrogen, Binding and utilizing air.....A. Sinding-Larsen
Nozzle, sprayer, and sprinkler...A. D. Gilpin
Nozzle, Water jacketed.....W. A. Clark
Nut for vehicle spindles, Lock.....W. H. Lnqnire
Nut lock.....A. Panalle
Nut lock.....J. H. Funderburg
Nut lock.....A. C. Mayers
Oil burner.....E. C. Sexton et al.
Oil burner.....M. W. Vielhaber
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Oil switch.....H. L. Smith
Ore sampling device.....L. M. Sheridan
Ore separator.....F. C. and F. C. O'Brien
Ores and similar material, Sintering fine..J. G. West, Jr.
Ores, Reduction of.....E. Thomson
Outlet box.....N. Marshall
Package roll of metallic leaf...C. E. Smith
Package tie.....L. E. McIvor
Packages, Bottom structure for metallic...L. J. and H. J. Hinde
Packed joint.....J. M. McDonald
Packing.....E. Christensen
Padlock.....J. A. Giese
Pail.....J. Danz
Pail cover, Milk.....A. Lundgaard
Pan handling device, Baking....R. Kallman
Paper bag rack.....C. J. Taber
Paper capsule for internally and externally covering the necks of bottles or the like..M. Von der Heyden
Paper marking device.....W. L. Bear
Paper winding reel.....G. Miller
Peat fuel, Preparing.....T. Franke
Pen, Fountain.....M. W. Moore
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Perforator, Casing.....H. B. Fulmer
Perfumes or the like, Demonstrating.....T. A. De Vilbiss
Petroleum, Utilzing acid sludge from refining.....J. C. Black et al.
Photographic apparatus, Film pack.....C. Bornmann
Photographic printing device.....J. W. Liebenrood
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Pin.....R. K. Maker
Pipe.....D. W. Womack
Pipe pulling machine.....J. Krulich
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Pipes, Means for removing scales, &c., from metallic.....J. E. Jones
Piping, Universal angle coupling and valve seat for.....H. G. Haase
Piston, Expansible.....E. Van Beyer
Plane, Router.....B. Aylor
Planter.....C. B. Thomas
Planter.....A. Henslee
Planter, Chainless corn.....T. F. Doubam
Plasterer's darby.....W. A. Whitman
Plow.....T. H. Bond
Plow.....J. W. Southwick
Plow beam.....J. M. Rivers
Plow and scraper, Combined...F. E. Allen
Plow, Motor.....L. S. Hackney
Poke, Animal.....A. Haven
Power generating apparatus..E. F. Hopkins
Power mechanism.....W. H. Voss
Presses, Transfer attachment and stop motion for.....A. J. Lewis
Printer's register hook...F. H. Berold, Jr.
Printing apparatus.....A. B. Dick
Printing machine.....S. O. Edmonds
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Printing machine ribbon inking mechansm..J. S. Duncan
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Printing press (2 pats.).....K. F. Kirkman
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Priming press sheet carrier....A. I. Peno
Printing surfaces, Retaining device for.....H. C. Osborn
Printing, Transfer.....C. A. McKerrow
Projectile.....J. H. Brown
Propeller.....J. R. Liston
Propeller.....W. R. Boutwell
Propeller.....A. C. de los Rios

Propeller, Screw.....O. G. Halvorsen
Propelling mechanism, Pnenmatic.....
.....T. W. Black
Pnlley, Driving.....C. Eloesser
Pulley, Sling or trip.....F. Wagner
Pump.....R. Conrader
Pump.....B. F. Mohr
Pump delivery valve, Centrifugal.....
.....A. Papillon
Pump for liquids.....B. B. Marshall
Pump, Jet.....W. E. Pedley
Pump piston.....L. W. Cushman
Pump, Rotary.....J. R. Kinney
Pumps, Relief valve for spraying.....
.....D. W. Wadsworth
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Rail bond (2 pats.).....S. P. Hull
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Rail brace, Broken.....J. L. Horvath
Rail chair and fastener, Combined.....
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Rail joint.....I. L. Edwards
Rail joint.....J. H. Ramsdell
Rail joint and fastener.....M. Effinger
Rail snpport and tie.....M. M. Goble
Railway automatic gate.....J. H. Hancock
Railway carriages, Automatic coupling for.
.....N. Pavia et al.
Railway cross tie.....G. G. McMurtry
Railway signaling device, Automatic.....
.....J. E. Hunt
Railway tie.....G. Edwards
Railway tie.....P. T. Cheevers
Railway traffic coutrolling system and apparatus.....W. H. Arkenburgh
Railways, Hauling rope grip for rope.....
.....F. Dohle
Ranges or stoves, Water tank attachment for F. R. Henry
Rat trap.....H. Haxton
Razor stropping device.....S. L. Long
Razor stropping device, Safety.....
.....C. D. and C. B. Coffman
Reamer, Expansible.....W. Turney
Recorders, System of operation for synchronizing.....E. O. Schweitzer
Reflector, Ventilated.....J. Meyer
Refractory article and making it.....
.....S. F. Hall
Refrigerator car.....A. H. Toens
Rendering and drying apparatus, Sanitary.
.....R. T. G. Lesinger
Resilient wheel.....C. L. Schwarz
Resuscitating apparatus.....W. G. Euston
Riveting device.....J. N. Kornahrens
Rolling mill.....J. H. Blakesley
Rolling mill.....V. E. Edwards
Roof joint.....C. A. Overton
Rotary engine.....J. Slee, Sr.
Sack.....W. H. Williams
Safety lock for pocket books..S. W. Wilson
Sand molding machine.....W. C. Norcross
Sash center.....A. A. Page
Sash holder.....J. P. Duncan
Sash holding device.....W. Gorst
Sash holding device.....W. M. Ducker
Sash, Window.....A. H. Newpher
Sashes, Pivot for deck.....B. F. Pierson
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Saw set.....E. G. Cosby
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Scale for refrigerators, Weighing.....
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Scale, Weighing.....B. D. Emanuel
Scrapers, Haul back carriage for reciprocating.....T. G. Kelly
Screen.....R. D. Stacey
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Screening machine.....T. M. Devine
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Semaphore signal.....M. Aitken
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.....J. G. Greene et al.
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Shaving, machine for making wood.....
.....J. Erixon
Shears, Adjustable tension attachment for..
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Sheet feeding apparatus.....M. J. Ward
Sheet metal bending or corrugated and crimping machine.....F. Todd
Sheet metal working machine..J. F. Wing
Shingle fastener.....C. S. Perry
Shock absorber.....H. H. Schmitt
Shock loader.....J. B. Schuman
Shoe.....A. H. Prenzel
Shoe rack.....A. M. Subberg
Shoe toe protector.....J. D. Kennedy
Shooting without projectiles, Device for practicing in.....G. Merarini et al.
Sign, Street car advertising..W. T. Childs
Siphon.....E. M. Johnson
Skip, Safety.....H. S. Atkinson
Skirt.....J. Fox
Skiving machine.....F. A. Thurston
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Slicing board, Bread.....E. Hilker
Sole machine (2 pats.).....E. E. Winkley
Spark arrester.....T. M. Van Horn et al.
Spark arrester.....B. C. Moxley
Spark coil cases, means for supporting....
.....B. Ames
Spark plug.....G. C. Davis
Spectacle mounting.....G. A. Bader
Speed indicator.....R. C. Dole et al
Speed governor.....F. J. Wood
Speed regulator for turbines, Automatic...
.....F. P. Heitman
Spike.....L. T. La Paugh
Spike or nail.....J. K. Hutchinson et al.
Spinning machine.....D. O. Pease
Spinning machines, Separator for ring.....
.....A. Hitchon
Spinning ring holder.....G. L. Pierce
Spool or bobbin winding machine.....
.....E. Wackerhagen
Spring suspension.....F. B. Stratford
Spring wheel.....R. Stock
Spring wheel.....W. R. Ihrig
Spntum cnp.....D. Johnson
Stairway, Spiral.....G. H. Haskell
Stalls, Sanitary apparatus for animal.....
.....F. J. Redmond
Stammering and stuttering, Device for preventing and curing (2 pats.).....
.....G. A. Peate et al.
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Stoker, Mechanical (2 pats.)..W. M. Duncan
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Stovepipe anchor.....N. Roller
Stump burner.....W. L. Read
Subsoil breaking attachment.....
.....A. Kenworthy
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Sugar juices, Crystallizing.....
.....P. Kestner et al.
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Switch operating cord or chain (2 pats.)..
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Switch operating mechanism..C. E. Wenrich
Switch stand.....W. M. Henderson
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Table.....W. L. Muender
Tack pulling machine.....J. B. Hadaway
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Telephone switchboard apparatus and circuits therefor.....H. J. Roberts
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Thermostat.....E. P. Alexander
Thill coupling.....F. M. Foote et al.
Thread and forming same..J. D. Armitage
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Tie and rail fastener.....A. Kozaczka
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Tile machine.....W. O. Beailor
Tire.....H. A. Brandenburger
Tire.....K. Chambers
Tire for vehicle wheels, Spring.....
.....M. E. Courtney
Tire protector.....A. H. Day
Tire, Resilient.....O. H. Duckworth
Tire shoe support.....H. W. Roberts
Tire, Spring.....T. Gilbert Russell
Tire tool.....J. H. Blake
Tire wrapping and unwrapping machine..
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Tool, Fluid actuated (2 pats.).....
.....C. T. Carnahan
Tooth adjuster, Spring.....F. B. Baker
Tooth, Artificial.....L. E. Evslin
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Track grinding machine....W. W. Gherky
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.....F. Hohenberger
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.....L. L. Mitchell
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Utensil handle and attaching means therefor.....G. Walker
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Vacuum cleaners, Sound deadening casing for
.....J. W. Smith
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Valve.....I. H. Spencer
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Valve device, Quick action triple.....
.....W. V. Turner
Valve for inflammable gases, Automatic check.....H. B. Migliavacca
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.....J. Milton
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.....L. Thomas et al.
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Vaporizer for hydrocarbon vapor lamps and stoves.....J. C. Preston
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Vehicle spring.....W. Roper
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Vehicle steering device, Traction (2 pats.)
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Vehicle wheel, Resilient....J. D. Van Atta
Vehicles, Grader attachment for traction..
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.....E. McLaren
Veil, Adjustable.....L. J. Wolfe
Ventilating device.....J. Leslie
Vessel closure.....G. W. Beadle
Vest.....F. T. Matthews
Veterinary instrument.....J. E. Carter
Violin, Electric self-playing..H. K. Sandell
Voting machine.....A. McKeuzie
Voting machine.....H. C. H. Cooper
Voting machine.....J. H. Dean
Wagon box rain cover.....G. S. Sowers
Wagon, Dumping.....J. Ganey
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Wash solution collector.....F. G. Peck
Washer J. Pickles
Washing machine.....R. E. Campbell
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Water heater, individual.....L. B. Rice
Water motor.....J. C. Howard
Water wheel.....C. J. Duncan
Waterproofing compound.....A. C. Horn
Well.....I. N. Terrill
Well apparatus attachment, Oil.....
.....J. W. Leonard et al.
Wheel.....S. C. Fregoso
Wheel construction.....H. W. Sandford
Wheel rim, Automobile.....P. B. Bosworth
Wheel rim, Vehicle.....P. B. Bosworth
Wheels, Demountable rim for automobile or other.....M. Halfpenny
Wheels, Elastic suspension for vehicle.....
.....H. Roze
Wheels, Manufacturing hand.....
.....C. W., F. H., and E. A. Bluemel
Wheelbarrow.....J. A. Lawrence
,,hiffletree.....H. B. Sledge
Whistle.....E. W. Schurman
Wind shield.....G. F. Murphy
Wind shields, Lock joint for.....A. Krah
Winding machine, Cord and rope.....
.....T. W. Norman
Window board set, Reversible.....
.....A. C. Bartlett
Window construction.....T. H. Kane
Window screen.....H. M. Day
Window screen.....F. P. Edler
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Wire drawing machine, Multiple.....
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Wire straightening and cutting-off machine.
.....E. F. Shuster
Wire stretcher.....L. Hanson
Wire stretcher.....J. L. Ashworth
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.....R. Hollingsworth
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Work support.....L. A. Casgrain
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Issued July 9, 1912.

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Acids and homologues, Manufacture of phenylated 6,6-diquinalyl-4,4-dicarboxylic....
.....M. Dohrn et al.
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Aeroplane.....J. M. Janesone
Aeroplane propelling wheel..N. C. Sorensen
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Air car or airship.....W. Friese-Greene
Air navigating machine.....E. Molnar
Airship.....B. M. Beskow
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Animal trap.....J. Van der Walt
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Animal trap.....W. A. May
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Atomizer.....W. S. Hay
Automobile signaling device.....
.....E. T. Burrowes
Automobile sleighs, Propeller for.....
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Automobile transmission gearing.....
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Automobile transmission mechanism.....
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Bag frame fastener.....H. Tueckmantel
Bag frames, Holding catch for..W. A. Lotz
Ball cages, Forming ball holders for.....
.....M. Gohlke
Bandage roll cutter.....D. O. Hallock
Barrette.....J. Machate
Bath tub head rest.....A. Zukor
Bearing, Side.....A. K. Wolfe
Bed couch, Extension.....J. Hoey
Bed jack.....T. J. Le Cras
Bed spring hoist.....A. C. Anderson
Beer mug, Sanitary vacuum...W. J. Miller
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Belt retainer.....I. Goldberg
Beverage extract.....W. H. Post
Binder, Loose leaf.....C. D. Trussell
Bleaching old papers, paper stock, straw, &c.....J. H. Melchers
Bleaching process.....E. L. Mannai
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Bailer feeding apparatus.....N. E. Nash
Boiler superheater, Steam.....W. Dalton
Boiler washing and filling system.....
.....F. W. Miller
Boilers, Pressure regulator for steam.....
.....A. Haleeki
Bolt heading tool.....H. E. Gideons
Bookcase, Folding.....S. H. Fanning
Boots and shoes, Machine for use in the manufacture of.....O. Ashton
Boring machine.....A. Hassler
Bottle, Non-refillable.....M. Forst
Bottle, Non-refillable.....J. F. Paquin
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Bottle support, Vacuum.....
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Bread cutting machine.....M. J. Ferren
Brick and facing tile therefor, Building....
.....J. E. Banks.
Brick machine, Rotary.....J. Walker
Bucket locking device.....A. Curd
Bncket mechanism.....C. A. Frayer
Building block mold.....R. C. Williamson
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Burglar alarm.....M. T. Morgan
Business systems, Means for carrying out..
.....E. Caverly
Cager and sump gnard.....G. Holmes
Calculating apparatus.....A. B. Bly
Camera, Developing.....S. D. Hajjar
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Camper's outfit.....R. Schwarzenbach
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Caoutchouc-like products, Manufacturing...
.....A. Caroselli
Car construction, Element used in.....
.....R. G. Taylor
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Car door operating device.....L. G. Handy
Car dumping and righting device, Pneumatic
.....N. Schacfers
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Cars, Advertising device for railway.....
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Cars, Angle cock hanger for air brake pipes of railway.....R. W. Burnett
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Cars, Danger signal for electric.....
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Carbon, Treating.....W. A. Smith
Carbureter.....A. C. Stewart
Carpenter's gage.....C. A. Matheson
Caster for store counters..B. T. B. Hyde
Cement construction, Reinforcement for..
.....A. Fleming
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Centrifugal switch.....J. A. Volk, Jr.
Chain link making machine..J. H. Baker
Chair fixture, Automatic....C. L. Greilick
Chair operating mechanism, Barber's.....
.....K. Moluf
Chalice, Hygienic.....C. J. Ljunggren
Chilian mill.....S. H. Pitkins et al.
Cigar box.....A. W. Fallon
Circuit closer.....G. H. Sloane
Circuit interrupter.....F. W. Harris
Clamp.....H. W. Heidbrink et al.
Clay or the like, Machine for cleaning and sorting.....M. Bohn
Clay pot making machine.....J. Schubert
Clock, Keyless (2 pats.).....W. E. E. Milz
Clock, Self winding.....S. S. Besore
Clothes rack.....C. W. Dudley
Clutch.....S. H. Pitkin et al.
Clutch, Fluid.....W. W. Henderson
Clutch mechanism.....
.....R. W. and L. H. Bateman
Cock and valve for liquids, gases, and steam
.....G. C. Hoare et al.
Cocks and the like, Device for automatically closing K. V. Rotzov
Coin controlled lock.....G. G. F. Boswell
Coin holder.....N. L. Anthony
Color lakes and making same.....
.....O. Stachlin et al.
Composing machine, Typographical.....
.....C. Muchleisen
Computing machine.....W. S. Johns
Concentrator.....W. L. Hawley
Concrete delivery apparatus....T. Emtman
Confectionery coating machine..J. Mathison
Container.....J. C. Peebles
Continuous press.....S. J. Vernsten
Copy holder.....J. F. Leigh
Corn, &c., Apparatus for heading Kafir...
.....T. H. Sparks
Corn popping device and attachment therefor.....J. C. Hilton
Corset, Apparel.....D. Kops
Cotton and like filaments, Mcchanism for cleaning.....G. Krall
Cotton gin. (2 pats).....J. R. Fordyce
Cotton gin, Vacuum.....J. R. Fordyce
Cotton picker.....E. C. Cook
Cotton picking apparatus.....A. P. Albert
Counter, Sanitary.....G. V. Maser et al.
Crank pin conplings, Forming universal..
.....W. L. Caswell
Cross, Folding.....H. T. Warlow
Cross tie.....J. H. Collins
Cultivator rake.....F. H. Chase
Curtain fixture.....E. E. Woodworth
Curtain pole.....J. Anderson
Curtain stretcher.....J. H. Hildreth
Currycomb, Self cleaning.....
.....J. E. and A. Gronlund
Cutter.....W. F. Hutchinson
Cutting tool, Rotary.....F. S. Walters
Damper regulator.....I. A. Backlund
Dental apparatus for removing wax from teeth.....P. H. Sands
Dental bridge, crown, and plate work, &c., Facing and backing for...W. W. Atkinson
Dental lathe attachment...W. F. Richards
Derrick.....J. L. Taylor
Desk table.....J. Herzog
Dirt receptacle, Wheeled.....J. G. Miller
Dish washing machine.....E. J. Miller
Disk feed, Automatic.....W. Deats
Display card, Merchandise..A. D. Rawlings
Display rack.....A. E. Miller
Door catch.....F. W. Ricker
Door hanger and track.....D. A. Dodge
Door hangers, Track for barn...H. L. Ferris
Door lock.....A. Tresselt
Door operating device, Sliding...A. Krause
Dongh cutter.....E. E. Lawrence

Dough cutting machine scraper.....E. E. Lippincott
Draft equalizer.....J. Deters
Draft or other blower sets, Diffusion valve for forced.....W. J. A. London
Draft regulator.....C. H. McCall
Drag, Revolving.....L. Weimer
Drainage of moors, Arrangement for the.....A. Butz
Drilling machine.....S. L. Long
Drilling machine.....M. K. Nakamura
Drinking fountain.....J. E. Johnsen
Duck blind, Collapsible.....H. C. Jannary
Dust collector or separator..O. M. Morse
Dyes and making them, Anthraquinone vat. (2 pats.).....M. Isler
Earth pushing and distributing machine.....F. O. Smith
Egg case and mean for emptying the same.....A. Brunnert
Ejector.....M. Leblanc
Electric apparatus, Starter for vapor.....P. C. Hewitt
Electric current regulator....J. S. Goodwin
Electric energy into heat, Means for transforming.....C. O. Bastian
Electric meter.....G. A. Scheeffer
Electrode.....W. A. Smith
Electrode, Composite.....W. A. Smith
Electrode, Composite.....E. C. Speiden
Electrode for secondary galvanic cells.....H. P. R. L. Porscke et al.
Elevator automatic stop.....P. L. Manlet
Elevator safety catch.....A. L. Bush
Elevator safety device.....E. S. Matthews
Elevator safety mechanism.....C. G. Armstrong
Ellipsograph.....C. C. Fine
Embroidering machine.....I. A. Antopol
Embroidering machine.....K. Keller
Engine base, Gas.....E. J. Gulick
Engine lathe attachment.....H. Newmann
Engine lubricating apparatus.....J. Horton et al.
Engine starting device, Explosive.....J. A. Brown et al.
Engine starting device, Internal combustion.....D. E. Crouse
Engines, Exhaust mechanism for.....C. H. McCall
Engines, &c., Mixer for internal combustion.....W. C. Westaway
Engines, &c., Mixing device for internal combustion.....W. C. Westaway
Engines, Sparking plug for internal combustion.....A. Zahringer
Esters of metacresol and derivatives of same with lower fatty acids.....N. Sulgberger
Evener, Side draft.....H. B. White
Excavating machine.....M. C. Hanson
Exhibiting and advertising device.....H. W. Pearson
Exhibition mechanism, Automatic.....R. E. Lippincott
Explosion engine.....H. Mortzsch
Explosive.....W. Roikmers
Eye-shield.....R. Malcom
Fan, Oscillating.....T. Kargan
Fastener inserting machine work gage (Reissue).....F. F. Eno
Fastening inserting mechanism..C. D. Foye
Faucet.....F. H. Lippincott
Faucet, Safety.....W. J. Clarke
Feed distributer for fowls.....F. F. Rosenberger et al.
Feed finger mechanism.....J. P. Hedstrom
Feeder, Chicken.....C. Campbell
Fender.....W. F. O'Rourke
Fertilizer distributer.....C. Gormley
Filing cabinet drawer locking mechanism.....A. T. Weiss
Filter.....P. Suykerbuyk
Filter, Gasoline.....C. A. Port et al.
Filter press ring.....G. Ely
Filter, Pressure.....E. J. Sweetland
Fire alarm, Automatic.....M. Gibson
Fire escape.....W. R. Cain
Fire escape.....F. E. Glaze et al.
Fire escape.....W. Nothaft et al.
Fireplace and camp crane, Portable.....F. W. Hibbs
Fireproof cabinet.....W. S. Easton
Fishing tackle.....J. H. Zevely
Flash light apparatus, Portable..N. Dowling
Flavoring, Soup.....L. Graf
Flies to boxes, Machine for applying paper.....A. L. Patterson
Fly board.....J. M. Bense
Fly catcher.....C. Thieme
Flying machine.....A. J. Crenshaw
Floor scraper.....E. W. Anderson
Floor surfacing machine.....J. H. Prugh
Flour, semolina, &c., Apparatus for the treatment of.....F. H. Loring
Flour, semolina, &c., Treatment of.....F. H. Loring
Flower holder.....M. Bugla
Flue protecting plug.....T. C. Ford
Fluid motor for milking apparatus, Elastic.....A. Kilborn
Fluid pressure engine.....B. Brazelle
Flushing tank.....C. H. Zwermann
Folding linen, cloth, and other material, Machine for.....E. L. Collon
Free running wheel.....E. G. Owen
Friction reversing mechanism.....N. B. Anderson
Furnace door operating mechanism.....R. R. Hillman
Furnace residues, Means for handling smelting.....E. Dor-Delattre
Fuse block.....R. C. Cole
Fuse, Percussion (Reissue)....E. Gathmann
Fuses, Adjustable delay device for ordnance.....E. O. L. Vogt
Gaff or grappling hook..W. N. M. Anderson
Gage.....W. H. Gelbaugh
Game apparatus.....F. Johnson
Garment, Antichafing and menstrual.....L. M. McPherson et al.
Garment, Combination..G. A. Kurz et al.
Garment hanger.....A. F. Carlin
Garment hanger.....H. C. Markman
Gas generator.....N. Goodyear
Gas generator, Acetylene.....W. H. Parker
Gas mixer.....J. Prescott
Gas producer.....J. H. Grissinger
Gas, Producing.....F. E. Fink
Gas valve, Automatic...R. T. Evans et al.
Gaseous fuel from liquid hydrocarbons, Means for producing.....A. W. Southey
Gear for reciprocating propellers, Driving.....V. Wisniewski
Gearing, Change speed..A. G. Waterhouse
Gearing, Differential....E. L. Wright et al.
Gearing for motor cycles, Variable speed.....F. W. Smith
Gearing, Reduction.....G. Westinghouse
Gem setting.....E. Coste
Gin saw cleaner.....H. A. Hicks
Glass drawing apparatus.....T. Spillane
Glass drawing machine, Sheet.....J. Player
Glass furnace.....G. H. Baillie
Glass, Method and apparatus for drawing sheet.....J. Player
Grain handling device....H. P. Harpstrite
Grain separator and cleaner.....T. E. Merryfield
Grass collector.....W. Ross
Grate and stove, Combination..B. B. Bowers
Grease cup.....C. G. Ritter et al
Grease cup.....J. W. Altick
Grinding machine.....J. A. Hunter
Grinding top flats, Apparatus for.....J. T. Wild
Gripper.....W. A. Bond
Gun carriage mounted on a pivot.....K. Voller
Gutter box.....E. W. Snow
Halls, &c., Erecting large.....H. Holland
Hammer, Bush.....W. F. Rice
Hammer, Splitting.....M. F. Williams
Hammock frame, Portable.....F. W. Hibbs
Harvester, Potato.....A. Baas
Hat fastening device.....A. Jambretz
Hat pin protector.....J. Kwiatkowski
Hay rake.....J. F. Greer et al.
Hay sling.....E. Thompson
Headlight adjuster for motor vehicles.....P. N. Squires
Heat transferring apparatus.....F. E. Rien et al.
Heater.....W. J. Dwyer
Hinge.....F. F. Unckrich
Hinge, Spring.....W. J. Keene
Hitching device.....C. H. Patten et al.
Hollow bodies from quartz, Manufacture of.....F. Wolf-Burckhardt
Horn pressure and locking mechanism, Work supporting.....P. A. Coupal
Horseshoe, Spring..D. S. and F. P. F. Witt
Hose patch.....J. H. Osborn
Hydraulic motor.....R. S. Carr
Hydraulic motor.....L. Purpura
Ice breaker.....W. E. Penn
Index system, Card.....C. P. Potter
Injector.....W. H. Locke
Inseam trimming machine and welt-pounding device, Combined hand knife.....W. B. Keighley
Insect destroying device.....J. Hampson
Insect exterminator.....H. J. Wagner
Insect trap.....T. G. Taylor
Insulator.....M. Nemes
Insulator, Mine.....F. A. Warren
Internal combustion engine..G. M. Fairfield
Internal combustion engine..L. Woodworth
Internal combustion engine or the like.....W. C. Westaway
Ironing board.....A. Gordon
Ironing board, Folding.....E. H. Faust
Jewelry, Article of.....M. L. Robbins
Journal bearing.....W. G. Price
Junction box.....H. R. Gilson
Kettles and for other cooking utensils, Inside vessel for fish.....R. Ritzenhoff
Key.....W. M. Nordenhold et al.
Kinematograph films and projecting such pictures to their normal proportions, Reducing the size of pictures on.....E. Zollinger
Knitting machines, Stop motion for circular.....H. McCrudden
Labeling machine.....H. E. Brown
Ladder, Extensible.....L. S. Putman
Lamp attachment, Incandescent electric.....O. Weber
Lamp, Electric arc (2 pats.)..T. E. Adams
Lamp, Electric table..W. A. B. Dalzell et al
Lamp, Gasoline.....H. C. Albrecht
Lamp manufacturing machine.....G. W. Beadle
Lamp, Miner's.....F. L. Flynn
Lamp, Multiple burner incandescent.....R. D. Cody
Lamp socket attachment, Electric..W. Haas
Lamp socket, Electric lock...A. J. Kempien
Lamps Connecting filaments and feed wires for electric incandescent....F. Hanaman
Lamps, Connection for running arc.....W. Schaffer
Lamps, Making electrically conducting joints in metallic filament incandescent electric.....A. C. Hyde
Lanterns, Condenser cell for kinematograph and optical.....L. Kamm
Lavatory and sanitary drinking cup, Combined.....J. H. Gavin
Leg, Artificial.....G. E. Marks
Letter drop, Door.....G. E. Seymour
Levers, Bracket for uncoupling.....W. P. Murphy
Lighting device.....W. E. Cochran
Lightning arrester (2 pats.)..R. P. Jackson
Linotype machine pot charger.....E. E. Spencer
Log grapple.....C. W. Ramey
Loom, Leno or crossing weaving.....F. B. Ricketson et al.
Loom shuttle.....J. A. Claus
Looms, Batten structure for narrow ware.....F. Benz, Jr.
Lubricator.....E. McCoy
Lubricator.....J. Horn et al.
Magnet apparatus, Alternating current brake.....A. Sundh
Mailing tube.....E. G. Hay
Measuring and bag filling device.....A. B. Crosby
Meat cutting or mincing machines, Feed device for.....O. Wefing
Metal frame.....A. W. Walter
Metallic tie, rail fastener and rail-joint.....H. J. Smith
Meter.....R. L. Dezendorf
Mine or lift cage safety gripping apparatus.....L. S. Rayner
Miter box.....W. N. Craig
Motor mechanism starting and stopping device.....A. H. Welker
Motors, Hysteresis starting device for induction.....B. McCullum
Mowing machine cutter bar.....C. Falk
Musical instrument expression controller.....F. Grundy
Nipple, Nursing bottle.....B. S. Lacey
Nozzle, Exhaust.....T. P. Webster
Nut and bolt, Lock.....R. T. Ainslie
Nut lock.....T. E. Stockford
Nut lock.....J. C. Deuchler
Obstetrical appliance.....W. H. Eblen
Oil burner.....J. H. Grissinger
Optical instrument.....A. Barr et al.
Ore feeder.....W. E. Wahlin
Ores, Treating.....E. Kerr
Ovens of the regenerating type, Reversing mechanism in.....L. C. Flaccus
Package, Wire (Reissue).....H. W. Struss
Packing for slide valves....E. H. Tartrais
Packing, Piston.....H. Gulbranson
Packing ring, Piston.....W. Thompson
Packing, Shaft.....W. Clifford
Paintings and similar art objects, Means for preserving oil.....K. Mussback
Paper and like bags, Machine for making.....J. Graham
Paper folding and cutting machine.....J. A. Polley
Paper making machine.....R. G. Benedict
Paving machine, Vegetable.....H. Robinson
Pasteurizing apparatus.....W. F. E. Casse
Phonograph record trimmer.....G. C. La Mountain
Photographic printing frame..F. E. Phillips
Photographic printing machine.....E. Schneider
Photographic shutter.....J. Richard
Picture machine.....G. W. Smith et al.
Picture projecting machine, Moving.....O. T. Weiser
Pie trimmer.....J. B. Curl
Piling, Junction member for steel sheet.....W. E. Buckingham
Pipe.....W. H. Yost
Pipe elbow forming machine..C. G. Naylor
Pipe wrench.....A. E. Ver Beck
Pipes from the injurious action of electric currents, Means for protecting.....G. Politz
Piston.....G. H. Stahlman
Piston rings, Closing and chucking device for.....D. E. Domzi
Pitchfork attachment.....G. A. Osternd
Plane.....E. A. Schade
Planing and jointing machine attachment.....J. R. England
Planter, Check row corn.....J. L. Stensby
Plastic applying device.....C. Swenson
Plastic substance from milk, Producing.....O. H. Nowak
Plow.....G. W. Mixter
Plow.....J. R. Rossetter
Plow, Hand.....J. E. Gibbs
Plow, Motor.....O. Czaran
Plug, Connecting.....C. L. Hagen
Plume, Reconstructed.....A. Eisemann
Plunger elevator, Hydropneumatic.....L. Atwood
Pneumatic despatch tube apparatus.....C. F. Stoddard
Pneumatic despatch tube apparatus.....J. G. Maclaren
Pneumatic despatch tube apparatus.....A. W. Pearsall
Pneumatic despatch tube apparatus.....C. S. Jennings
Pneumatic despatch tube apparatus.....J. G. Maclaren
Pneumatic despatch tube apparatus.....A. W. Pearsall
Pneumatic despatch tube apparatus carrier.....L. G. Bartlett
Pneumatic despatch tube apparatus terminal.....J. T. Cowley
Pneumatic despatch tube apparatus, Terminal for.....A. W. Pearsall
Pneumatic tube apparatus, Carrier for.....E. R. Taisey
Pocket device, Safety.....G. W. Carver
Power generating system, Liquid expanding and concentrating.....J. Patten
Power transmitting mechanism.....A. P. Filippi
Pressing machines, Bed or table for steam.....W. A. Petrie et al.
Pressure regulator.....E. W. Evans
Printing machine.....C. A. Blodgett
Printing plate base.....C. S. Mills
Printing press bed motion..M. A. Droitcour
Printing press gripper..O. Van der Meersch
Propeller, Aerial.....H. H. Elliott
Provision chopper.....W. Ritschard
Pulley.....R. H. Bowen
Pulverizer and leveler, Soil..T. V. Barnard
Pump, Rotary.....S. D. Wright
Pump, Rotary.....E. Morrell
Pump steel rotor, Centrifugal....E. Kreher
Pump, Vacuum.....H. D. Madden
Pumps of certain types for the pumping of liquids, Regulating.....H. M. and T. M. Chance
Pumping liquids...H. M. and T. M. Chance
Punching bag apparatus.....R. A. Hart
Puzzle.....F. R. and C. E. Long
Rail anchor....J. W. and D. C. Stephenson
Rail anchor.....W. M. Mitchell et al.
Rail anchor.....J. J. Byers
Rail fastening.....A. Franz et al.
Rail fastening for metallic ties.....G. C. Hammett
Rail grinder, Adjustable....G. E. Pellissier
Rail joints and the like, Fastening for.....J. W. Stephenson
Rail laying machine, Device for preventing the tilting of.....J. Reinehr
Rails of tramways or the like, Apparatus for mechanically cleaning the..C. Delmez
Rail seat on ti[illegible]..J. W. K[illegible]
Rails to ties, Device for s[illegible]
Railway block system.....W. C. R[illegible]
Railway rail.....F. H. K[illegible]
Railway rails, Implement for l[illegible]
Railway spike.....T. C. S[illegible]
Railway tie and fastener....A. C. Candland
Railway tie, Metal.....W. C. Fr[illegible]
Railway tie, Reinforced cement..J. H. Frisel
Receptacle, Pocket.....A. C. Erickson
Refrigerating apparatus.....M. Le blanc
Refrigerating machinery, Gas expansion header for.....H. D. Stratton
Refrigerator car.....J. P. Elmer
Release rigging.....W. P. Murphy
Rendering tank.....H. T. Bechta
Rest and clamp, Combined..J. P. Hedstrom
Rheostat.....F. D. Hallock
Rheumatism, Apparatus for treating.....R. A. Breakfield
Rifle, Magazine.....A. R. Adamson
Roof for silos or the like....C. E. Martin
Rope and twine making machine.....R. Delaney
Rope drive elevator, Friction...E. Boening
Rotary mixer.....H. A. Seifke
Roundabout or carousel.....J. M. Taylor
Rugs, curtains, and the like, Support for.....F. Nessel
Running gear.....D. G. Tatum
Saddle ring, Harness.....C. W. Stump
Safety device, Automatic....G. E. Thurber
Safety lock.....C. A. Muller
Safety lock for relatively reciprocal members.....W. H. Cameron
Sash, Window.....B. Ktausky
Sawing machine for cylinder packing rings.....C. L. Dickert
Scale, Automatic.....F. H. Headen
Scale, Fabric.....M. Munzner
Scale, Weighing.....B. D. Emannel
Scales, Integrator for conveyer belt, weighing.....W. P. Buchan
Scraper, Adjustable.....N. D. McCollum
Scraper, Road.....J. M. Elliott
Screen device, Window.....C. J. Carlson
Screw stopper for cans, drums, jars, bottles, &c.....G. W. Cox
Screws, Expansion shell for..G. M. Belton
Seal, Car.....W. H. Northall
Seed testing apparatus....W. J. Buttschan
Sewing machine, Blindstitch.....W. Zabel
Sewing machine work feeding mechanism.....A. R. Schoenky
Sewing machines, Hook and eye clamp for.....J. K. McComb
Shade and curtain support, Window.....J. Sterner
Shade fixture, Window.....W. G. Templeton
Shade, Window.....A. V. Challinor
Shaft coupling.....U. Haskins
Shaft hanger.....S. E. Ryder
Shaft heels to shaft irons, Means for securing curved.....J. M. Meyer
Shaft, Vehicle.....T. J. Hoosly
Shafting, Machinery..W. J. Stewart, Jr.
Ship, vessel, &c., Apparatus for indicating the trim of a.....D. Mackay
Ships, Sighting device for use on.....J. von Petravic
Shipping box.....G. M. Walker
Shock binder.....M. A. Williams
Shock loader.....P. J. Donovan
Shoe bottom filler and making the same.....A. Thoma
Shoe polishing and cleaning machine.....W. A. King
Side carrier.....W. Weis
Siding and shingling gage.....G Keyes
Sieve purifier.....W. Baker
Sign flasher.....S. A. Palmer
Signaling mechanism.....C. H. Foster
Signaling system.....C. D. Ehret
Signaling system, Electric....J. S. Harley
Silencer.....A. Lloyd-Horry
Silo (2 pats.).....G. H. Horn
Sleigh.....F. Reubenhagen
Spark arrester.....C. S. Garton
Spark arrester.....D. Schneider
Spectacles.....N. Bourquin
Speed device, Variable.....E. Draullette
Speed mechanism for motor vehicles, Variable.....T. Lumsden
Spinning, Cotton.....A. J. Richards et al.
Spinning ring.....J. A. Morse
Spout.....A. T. Adams
Spring seat and back, Combination.....G. W. Robertson
Spring wheel.....W. N. Carroll et al.
Spring wheel...H. M. Hanna, Jr. et al.
Sprinkler system, Automatic.....T. J. Stankiewicz
Stability device.....F. Xyllas
Station indicating device..C. Schenck et al.
Stave making machine.....T. G. Martin
Steam boiler.....A. Halecki
Steam, Generating.....H. I. Lea
Steam generator.....L. M. G. Delamay-Belleville
Steam generators, Heating or circulation of.....J. E. Fletcher
Steam trap.....J. H. Hines
Steel, Apparatus for the production of.....H. Johnson
Steel, Unmagnetizable (Reissue).....F. Kohlhaas
Stilt, Adjustable.....L. P. Bramhall
Stoker.....W. H. H. Stineman
Stone cutting machine...B. A. Westerling
Stop mechanism.....W. E. E. Milz
Straightening press.....J. Johnson
Swimming apparatus.....I. Scott
Switch mechanism.....E. G. K. Anderson
Switching mechanism, Electric..J. S. Harley
Swivel pan joint.....T. Emtman
Tack feeding mechanism.....C. D. Foye
Tap socket.....W. N. Clouse
Target.....W. E. Hawthorne
Telegraph transmitter.....R. S. Welty
Telephone receiver.....C. T. Mason
Telephone receiver holder.....F. H. Goss
Telescope carrier.....O. Mackensen
Theatrical stage appliance.....J. E. Smith
Thermometer case.....J. B. Young

Thermostat.....J. S. Harley
Thermostatic regulating device.....E. W. Comfort
Threading tool.....C. B. Bickel
Threshing machine.....T. Dugan
Threshing machine, Wind stacker for.....T. J. Gee
Ticket, Railway passage.....J. S. Gibbs
Tie plate.....C. J. Gadd
Time exposure meter.....E. M. Woodworth
Time lock, Recording.....L. C. Bush
Timing device.....I. L. Reeves
Tire.....F. G. Kollenberg
Tire.....J. A. Bowden
Tire, Pneumatic.....W. H. Burritt
Tire shoes, Core for manufacturing pneumatic.....W. T. Childs
Tobacco stemming machine...G. F. Eckert
Tooth mold, Artificial.....J. Kohn
Torpedo nets, Device for cutting or destroying.....W. Golsteyn
Toy.....R. R. Essig
Toy, Animated.....A. Gund
Track fastening (2 pats)...J. W. Stephenson
Tracker device for sheer controlled instruments.....J. C. Hagey
Transplanting pot.....W. C. Hills
Trap.....F. Obiols
Trap.....D. H. Clippinger
Trays, boxes, &c., Corner brace for.....J. Courville
Tree guard.....I. C. Lanhan
Trimming device.....A. Swensen
Trolley head.....R. J. Meyers
Truck, Car.....W. S. Adams
Truck, Railway car.....W. P. Bettendorf
Trucks or rail cars, Driving gear for electrically actuated.....W. J. Spangler
Trunk.....D. Wolfson
Trunk strap.....M. L. Mix
Truss.....T. M. Merck
Tube.....J. W. Hawkins
Tube cleaning tool.....W. S. Elliott
Tube making machine.....E. J. Schoettle
Tunnels, Boring.....N. Ebbley
Turbine, Duplex rotary steam....S. Samuelsson
Turbine, Gas.....A. T. Kasley
Turbine, Reentrant.....G. Westinghouse
Turbo compressor.....E. W. Koster
Turning taper surfaces, Lathe attachment for.....E. L. Mills et al.
Twine cutter.....J. R. Caldwell
Typewriting and computing machine.....C. C. Taylor
Typewriting machine (2 pats.)...E. B. Hess
Typewriting machine.....C. H. Shepard
Typewriting machine.....H. H. Steele
Typewriting machine.....C. Gabrielson
Umbrella.....A. W. Thomas
Umbrella.....A. C. Page
Umbrella attachment....T. C. Frederiksen
Umbrella drip cup.....P. E. Davis
Umbrella, Folding.....J. Peterson
Uncoupling means.....C. H. Tomlinson
Uncoupling mechanism....J. and W. Kelso
Unwinding device.....C. Ryden
Valve.....G. Staunton
Valve apparatus, Hydraulic...E. S. Matthews
Valve, Drain.....T. M. House
Valve, Float.....W. Stock
Valve for engines.....E. H. Allfree
Valve gear.....W. E. Johnston
Vapor apparatus starter.....P. H. Thomas
Vault, Burial.....J. H. Milligan
Vehicle attachment.....A. R. Hagstrom
Vehicle spring (2 pats).....G. M. Huston
Vehicle supporting device...G. Westinghouse
Vehicle wheel.....I. F. Tucker
Vehicle wheel.....L. H. Hodges
Vehicle wheel.....L. Hoskins
Vehicle wheel.....F. F. Dorsey
Vehicle wheel, Motor.....F. O. Woodland
Vehicle windows, Balancing device for.....K. Landa
Vehicles, Auto fore carriage for.....G. E. N. I. E. Subra
Vehicles, Driving mechanism for electrically propelled.....J. Krohn
Vending apparatus.....F. G. Axt et al.
Vulcanizer.....F. W. Bacon
Washbench.....J. P. Doran
Washboiler ejecting means.....F. Wilcox
Watch fob.....T. W. Foster
Watch stem winding and setting mechanism.....S. A. Leslie
Water closet.....F. A. Schossow
Water closet valve.....A. Zimmerman
Water elevator, Compressed air.....A. O. Brown
Water meter.....H. Chrisman
Waterways, Channeling machine for.....G. W. Churchill
Wave motor.....J. Kindleberger
Wave motor.....J. Nyswander
Weather strip.....W. Butler
Weaving machines, Heddle for leno.....W. P. Wood
Wedge.....W. Walters
Weighing device.....C. E. Dennison
Welding apparatus, Seam....R. F. Nailler
Wheel.....H. V. Snell et al.
Wheel.....E. B. Franzheim
Wheel rim.....C. F. Jenkins
Wheel rim, Metallic.....O. T. Svensen
Wheelbarrow, Dumping.....B. L. Long
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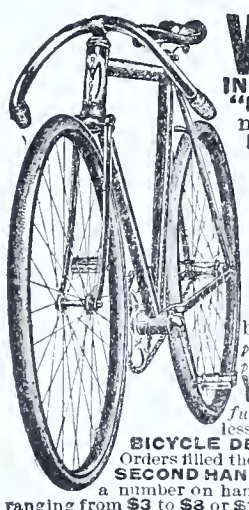
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Embroidering machine, Crank hemstitch...D. Noble
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Speaking tube terminal.....R. N. Johnson
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Stovepipe retainer.....W. H. Plasants
Strainer, Milk.....R. L. Lynch
Street and station indicator..H. C. Shipman
Street service box for water and gas.....W. M. Rapp
Street sprinkler oiling attachment.....R. E. Carlton et al.
Stuffing box.....W. De Huff
Stump splitting and removing machine.....A. S. Hunter
Subways, Constructing.....E. R. Shnable
Sugar from lignocellulose, Producing fermentable.....M. F. Ewen et al.
Sugars from cellulosic materials, Producing fermentable.....G. H. Tomlinson
Sugars from lignocellulose, Producing fermentable.....G. H. Tomlinson
Sugars, Producing fermentable.....G. H. Tomlinson
Sugars, Producing fermentable.....F. E. Gallagher
Support, Adjustable.....J. Allingham
Support, Work.....A. Chaplin et al.
Surface gage.....J. B. Flint
Surveying instrument.....G. H. Stone
Suspenders.....F. J. Hengy
Switch point guard.....D. S. Jones
Talking machine record holder.....L. F. Douglass
Tamping shovel, Dirt.....H. A. Sherman
Taximeters, Locking shutter for.....P. Richert
Telephone attachment....M. M. Wentworth
Telephone mouthpiece, Antiseptic.....C. V. Fuller
Telephone systems, Cable terminal box for.....T. B. Farmer
Telescope level.....H. L. Cole
Tempo regulator, Automatic...W. H. Rees
Thread gage.....W. H. Nichols
Tie plate.....J. W. Walton et al.
Timing mechanism.....C. R. Moore
Tire.....C. T. Coates
Tire, Cushion.....D. [illegible]ock
Tire holder.....[illegible] C. Cole
Tire puncture proof casing, Pn[illegible]....T. T. Sh[illegible]o.
Tire, Vehicle.....L. R. Hess [illegible]
Tire, Vehicle.....H. M. [illegible]er
Tongue snap, Spring.....J. B. B[illegible]
Tool, Combination.....J. Rosen
Tool directing machine.....P. J. O'Brien
Tool holder, Combination.....W. L. Hine
Toy.....J. Hill
Toy and game.....A. N. Pierman
Toy, Spinning.....C. B. Winzer
Trace eye protector and spacing strip, Combined.....D. L. Du Val
Track, Angle.....R. W. Roschrough
Track gage, Adjustable.....B. B. Schneider et al.
Tracker bar.....W. F. Cooper
Train order deliverer.....J. G. Northcutt
Train transfer device, Moving..A. Schelest
Tray and glass holder, Combination.....J. Herrod
Triangle, Draftsman's.....F. S. Crispin
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Trolley switching device, Overhead.....H. E. Baldrid
Trolley wire hanger.....K. L. Curtis
Trolley wire hanger.....C. J. Hixson
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Truck Car.....H. M. Pflager
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Turbine, &c., Gas.....H. Holzwarth
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Turpentine and sugar, Treating liquid cellulose for recovering....G. H. Tomlinson
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Valve and governing the speed of engines, Combined means of operating the throttle.....G. W. Seaman
Valve, Automatic safety.....C. A. Moore
Valve construction, Engine..H. E. Coffin
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(Continued in October Number)



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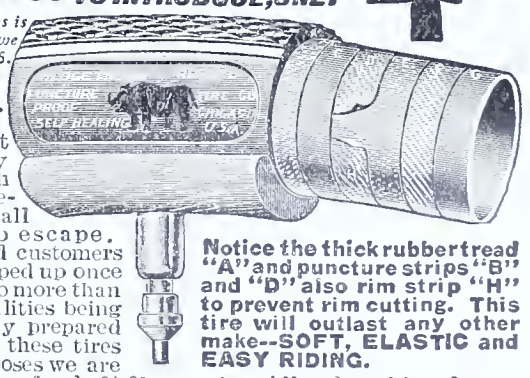
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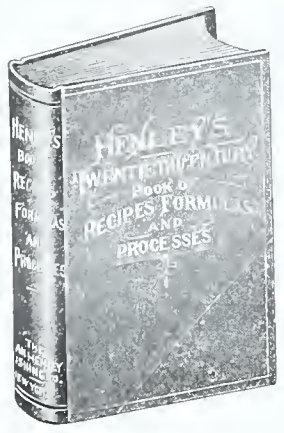
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VOL. XXIV. NO. 10. } WASHINGTON, D. C.—OCTOBER 1, 1912. } SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

A REMARKABLE TILE DITCHER.

By FRANK C. PERKINS.

An interesting ditching machine, designed at Mt. Pleasant, Iowa, is shown in the accompanying illustrations. This tile ditcher, it is claimed, handles dirt at the rate of one cubic yard per minute, in trenches from sixteen to twenty-one inches in width and as deep as nine feet.

The illustration, Fig. 2, shows one of these ditchers in a trench sixteen inches wide and five feet deep, cutting one rod in three and one-fourths minutes, in soil that is so dry and hard that it would not be profitable to dig by hand at two or three times the cost for machine work. The machine, built almost entirely of steel, is designed to withstand the strain and shock caused by buckets striking stone. It is provided with a cleaner plate that exactly fits the inside of the cylindrical buckets, and this plate must pass through every bucket at each revolution, removing all sticky dirt from the buckets.

It is interesting to note that a perfect grade may be secured with this machine, because the excavator can be moved vertically up or down quickly, and the leveling bar is directly above the point in the trench where the deepest cut is made by the buckets. This ditcher has an endless chain upon which the buckets are carried by means of rollers, which travel in perpendicular leads. There are ten of these buckets on the chain on this nine foot machine, and their travel is positive.

It will be seen that the buckets, being sharpened and flared on their two sides and front edge, are also cutting blades. These buckets begin cutting at the lowest point in their travel around the bottom sprocket wheel, making the bottom of the ditch true to the grade already determined. It may be stated that the front edge of each bucket cuts a slice of soil varying in thickness according to depth of ditch, the feed being regulated so that each bucket will carry up about one bushel of dirt at the rate of over forty buckets per minute. When a wider ditch than the buckets will cut is required, cutting blades are attached at the bottom of each bucket and the size of the ditch may be increased.

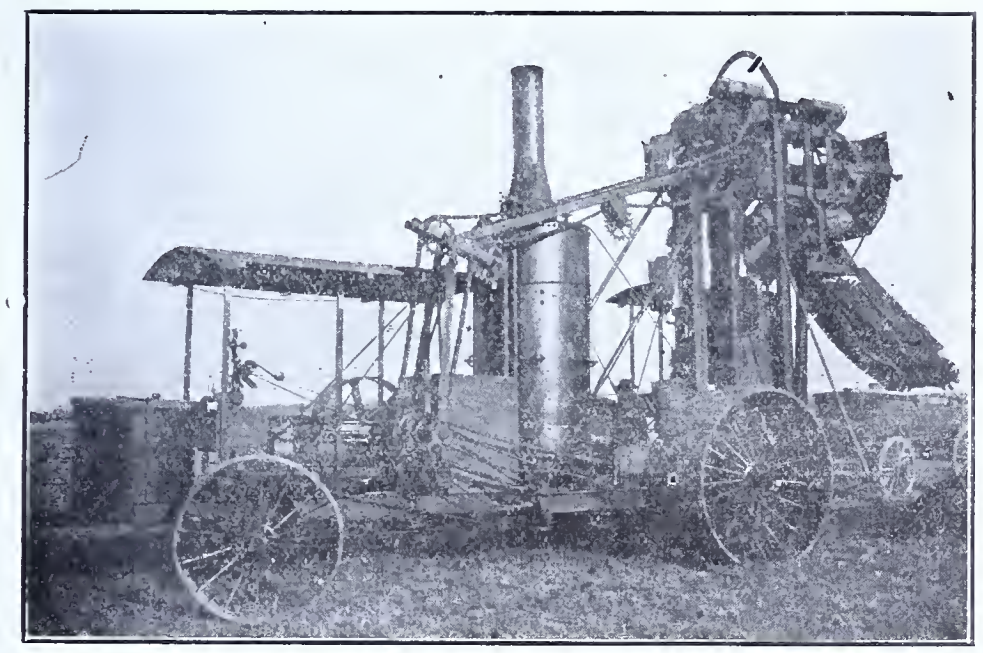


FIG. 1.—FRONT VIEW OF TILE DITCHER.

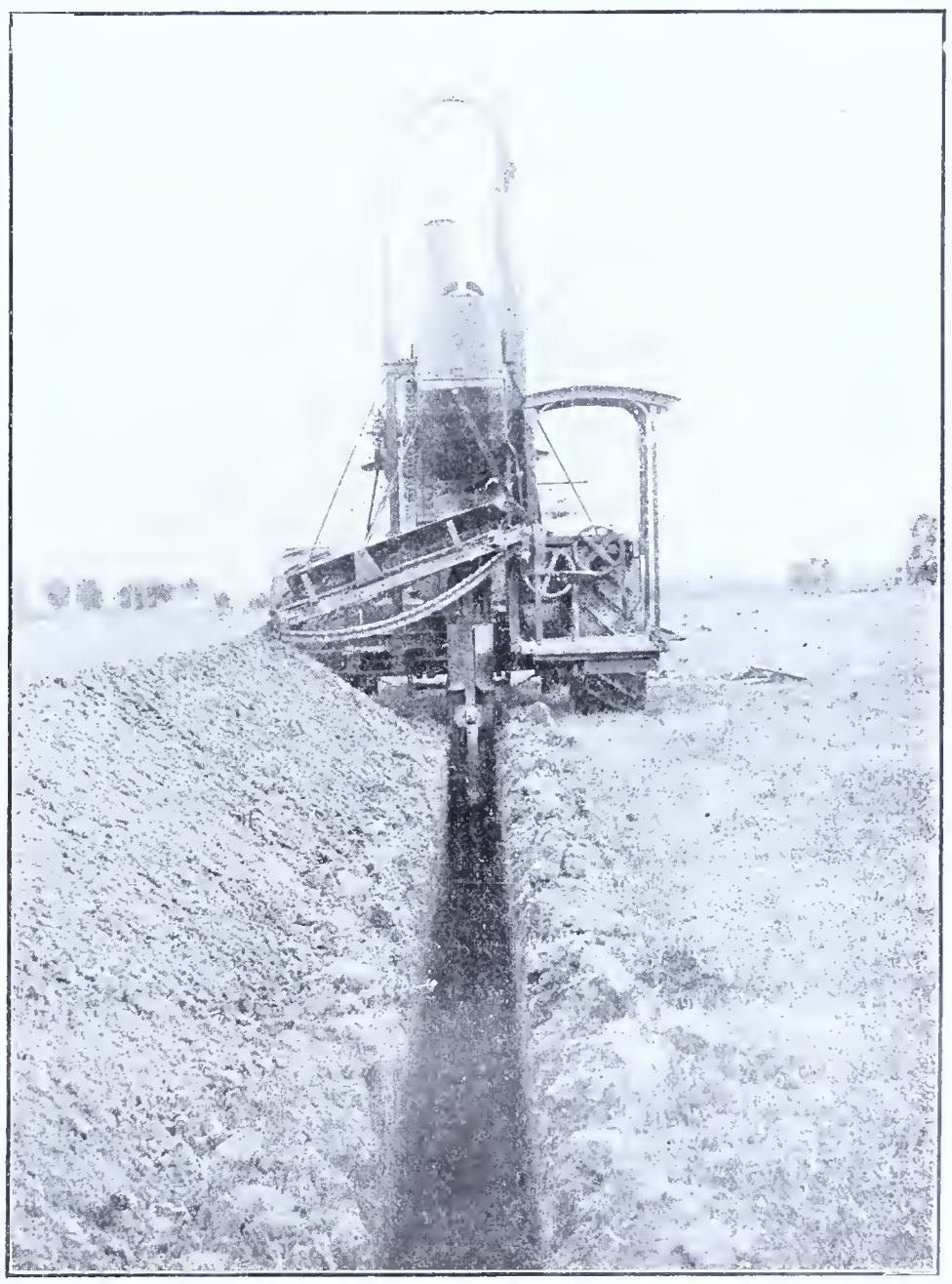


FIG. 2.—REAR VIEW OF MACHINE IN OPERATION.

In cutting to grade, the entire excavating part, consisting of buckets, the chain to carry same with rollers and the leads, may be moved up and down perpendicularly by means of a clutch and gear arrangement, so quickly that the bar attached to the side of the leads can be kept on a grade with the two grade stakes ahead of the machine. It is held that the lowest cut made by the bucket is exactly beneath this bar, and the line made by the low cut of the buckets is parallel with the line represented by

the top of this bar and the top of the two grade stakes. There is a crumber attached to the rear of the excavator, which removes a little dirt from the middle of the ditch, leaving a groove at the bottom for the tile.

It is maintained that the speed of the machine when cutting in the field is governed by cone sprocket wheels, that make about twelve changes possible, running from four to twenty-four rods per hour. When not cutting a ditch, the machine can be moved at a greatly increased rate of speed.

In disposing of the dirt, the buckets head downward, at the rear and top of the excavator, discharging most of the dirt on the drape, unless the dirt is sticky, when the cleaner plate removes the dirt from the bucket and the drape carries it to the side of the ditch. It is said that only one man is necessary to operate the device, as the mechanism is all connected with hand wheels or levers in the rear cab, where the operator sits. There is provided a run board around one of the drive wheels to the coal box where the boiler is fired, other men hauling the water and coal and laying tile.

It is said that this machine has been operated in hard roads where there was six inches of frost, and in the stickiest gumbo with equal success, and it has been used in farm drainage, laying pipe lines, gas mains, sewers, underground wiring, water mains, and country work to special advantage. It is said that one of these machines at Rutledge, Mo., recently made an average of 140 rods per day in a three foot ditch, while at Williamsburg, Iowa, 635 rods of ditch 3½ feet deep was excavated in a little over four days.

FOREIGN DEMAND FOR U. S. AUTOMOBILES.

As well as supplying the great home demand for motor vehicles, the automobile manufacturers of the United States are annually making great strides in their invasion of the foreign markets, according to a monograph entitled "Foreign Markets for Motor Vehicles," just issued by the Bureau of Manufactures, Department of Commerce and Labor. This publication is a compilation of reports from American consuls stationed in every part of the globe, and is arranged with the particular end in view of aiding American manufacturers to extend their foreign sales. It desoribes the peculiarities of the various markets, special local conditions and prejudices to be considered, foreign competition to be met, and the best methods of selling cars.

Canada is the United States' best market, the majority of the cars in use in the territory of our northern neighbor being either made entirely in the United States, assembled in Canada from parts imported from the United States, or made by Canadian branches or affiliations of American firms. The exports of automobiles from this country to Canada have risen from 1,230 in 1909 to 4,687 in 1911.

The high road-clearance, flexibility, and moderate price of the American car are steadily winning in favor in regions where highway conditions are similar to those in the United States. The market in Australia and New Zealand is already being well cultivated by American exporters, while Argentina, Brazil, and Uruguay in South America, and British South Africa are named as promising fields for future sales. It is estimated also that there are more American than European cars in use in Mexico.

In the Far East, Ceylon, India, Japan, Siam, and the Straits Settlements are the most likely markets. China has little use for automobiles, as most of the roads of that country do not permit their use. The reputation of American-made cars in India suffered some years ago because some inferior cars were sent among the earlier shipments to that country, but the cars brought from the United States recently have been of such high grade as to dispel this prejudice. In the Straits Settlements the principal buyers are wealthy Chinese, who demand comfort and luxury in their cars rather than high power. As a result, low-hung, smooth running cars are the most popular, and the local trade often demands that each car be fitted in accordance with the individual taste of the owner. Right-hand drive is essential here, as in the Orient all traffic turns to the left, instead of to the right, as in the United States.

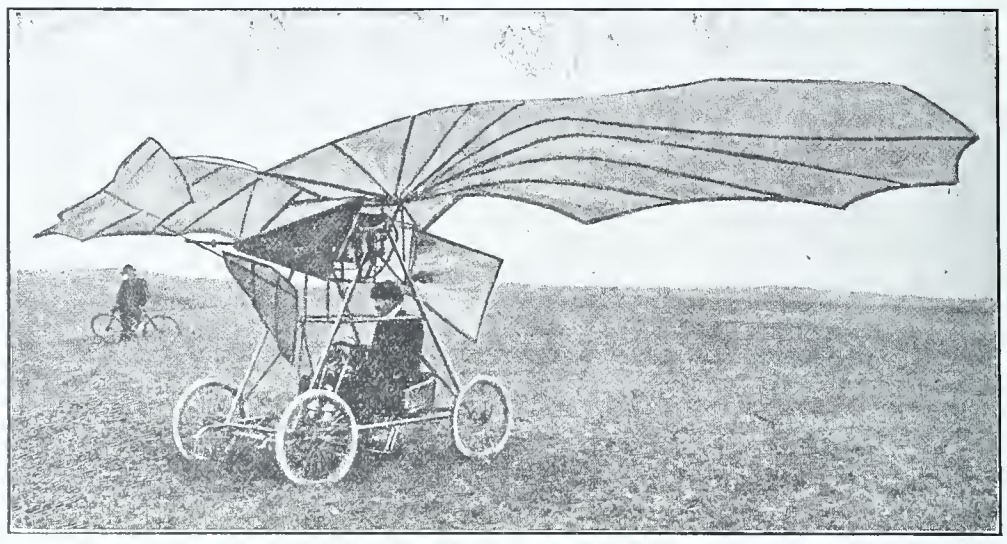
The United Kingdom has been and continues to be an excellent market for American cars, ranking next to Canada in purchases from the United States, but the sales in Continental Europe have thus far not been extensive. The excellent roads of most of the European countries permit the use of a heavier, lower-hung car than is found commonly in the United States. In England, however, the low prices and complete equipment of American cars are fast increasing their popularity, while they are rapidly overcoming the prejudice against them, due to the sale of many cheap, unsubstantial American-made bicycles in England some years ago. The method of American dealers of putting their cars on the market fully equipped is in strong contrast with the practice of Continental makers, who quote prices on the chassis only with the body and all equipment listed as extras.

How to Get Copies of Patents.

THE INVENTIVE AGE prints each month a list of the patents granted by the Patent Office. This list includes the name of the inventor, the title of the invention and the date of the patent. Anyone can procure through THE INVENTIVE AGE a copy of any patent included in the list, by giving the data and enclosing ten cents in stamps for each copy. There is no better way of keeping yourself informed about the progress of the arts than by scanning the list each month and ordering copies of patents.

MOTORLESS AEROPLANES.

FRANCE is again leading in aviation matters, competition having been held for motorless aeroplanes. Prizes amounting to two thousand dollars were offered for flight by human energy alone, without the aid of a motor, and though none of the contestants succeeded in winning a prize, it is at least a start in a new direction. The new machines, which are called aviettes, are merely bicycles or tricycles fitted with planes and propellers, the motive power being furnished by the rider through the pedals. To win, the rider had to rise from the ground, if only a few inches, and travel a marked course of 33



AVIETTE.

feet. The distance was selected on the theory that it just sufficiently exceeded the world's record for a running hroad jump to demand a real flight to accomplish it. The road to success in this interesting field of aerial endeavor must, according to experts, lie in scientific reduction of the forward resistance, rather than in any hope that by main force alone powerful athletes can force present types of structures through the air at sufficiently great speeds to cause them to lift. Most of the aviettes failed through crude and faulty construction.

The historic glider of Lilienthal had its planes shaped like the wings of a bat, and it is interesting to observe that the aviette herewith illustrated returned to this type of structure. With success in this new line, the term "bird man" would be even more appropriate to aviators than it is now.

New Marine Engine.

The introduction of the steam turbine on shipboard has forced the manufacturers of reciprocating engines to cudgel their brains in order to meet its competition. The principal trouble with the turbine lies in the enormous condenser which it requires, as this makes the combination weigh about as much as the old reciprocating engine. Its condenser must be extra large because the steam economy of the turbine depends upon its capacity to utilize mechanically the lowest inches of vacuum that the condenser can achieve. With its condenser, it weighs so much as to cause the naval architect to look about for something else. The solution appears to he in the introduction of a marine engine adapted to use superheated steam. From the all-important consideration of weight, it gives us a light, compact engine, getting most of its work out of the steam in itself, and hence requiring only a moderate condenser. In the engine room of any large steamer there is an astonishing array of connecting rods, eccentrics, and other moving things which appear to prey upon the main crank-shaft. There is a go-ahead and a go-astern connecting-rod and eccentric for every single cylinder valve-chest, and these in addition to the piston connecting-rod, which alone seems to have an excuse for existence, in that it turns the crank.

In fact, says the *World's Work*, this latter is all that does remain in the superheated steam type of marine engine, all the rest having been picked clean by a change in the valve system. At a single stroke six eccentrics, six eccentric straps, six connecting rods, and three reverse links have been swept off the engine, leaving it vastly more simple and easy to take care of and lessening the necessary engine space, which is of tremendous importance on shipboard.

All this is done by using lift poppet valves to admit and exhaust the steam, just like the inlet and discharge valves in an automobile engine. And a single cam-shaft runs all of them, precisely as in the gasoline motor. It is much simpler than the old link and slide-valve of the ordinary steam engine. As the admission and exhaust valves can be exactly opposite each other in a steam engine, the same cam serves both, so the cam-shaft runs along in the niche between the admission and exhaust valve-bonnets.

The engine can be reversed by throwing the cam-shaft ahead half a turn. Governor control of all the valves is had by suitable links from an inertia governor to the cam shaft, a device that will prevent many weary watches at the main throttle, as is now done when the ship pitches her screw out of the water during a storm.

A lot of these engines, of 6,500 horsepower, were recently built into the latest torpedo boats for the German navy, and their officers report them more economical of coal and easier to keep in good shape than the turbines of the older boats.

RAILLESS TRACTION LINES IN BREMEN.

Two electric omnibus lines with overhead supply have recently been started in the city of Bremen. The distance of the lines, which have a length of about two miles, is covered in twelve minutes. the maximum speed attained being 15½ miles per hour.

The cars have a seating accomodation for twenty persons, and their weight is from 4 to 7 tons, when full, and 3 to 2 tons when empty. Their electric equipment consists of a single series-wound D. C. motor set axially in the center of the car and geared to the back axle. It has a normal rating of 18 horse power, and a maximum rating of 35 horse power, at 620 R.P.M.



FIG. 1.—GERMAN TRACKLESS TROLLEY.

The controller is of the ordinary drum type with magnetic blowout, and has five running steps and two braking ones. It is interlocked with the two foot brakes in such a way that to put either of these on, automatically cuts off the supply of current, and keeps it off until the brake has been released and the controller has been turned back into the starting position. The necessary speed variation is effected by coupling the motor field coils in parallel and in series, and the rest by series resistance.

One of the most interesting points about these lines is the method adopted for collecting the current from the overhead wires. The two wires are arranged with the negative vertically over the positive, instead of side by side. This simplifies the overhead construction and the collector, and at the same time improves the general working, especially as only the one pair of wires is provided for cars travelling in both directions. Cars meeting one another on the road have consequently to stop and interchange their collectors; but as this merely involves opening a plug connection, it only causes a delay of from 12 to 15 seconds. The overhead lines are of profile wire, 63 sq. m. m. in section, and are set 11 inches apart vertically. They are suspended at intervals from 88 to 98 feet, with additional distance pieces at about 30 feet intervals.

One of these devices is shown in detail in the accompanying drawing, together with the current collecting gear in its two extreme positions. The insulated bolts *n* carry the clamps *x* for the wire *i*, and the whole is supported in the C-shaped forging, which is provided with three lugs for the suspension wires. These wire are attached to the poles through insulators, so that the usual double insulation is provided. The negative wire is earthed every 1,000 yards, and, being the upper wire, it forms a certain protection for broken telephone wires, should these fall across the line. The positive line is provided with lighting arresters at the same intervals.

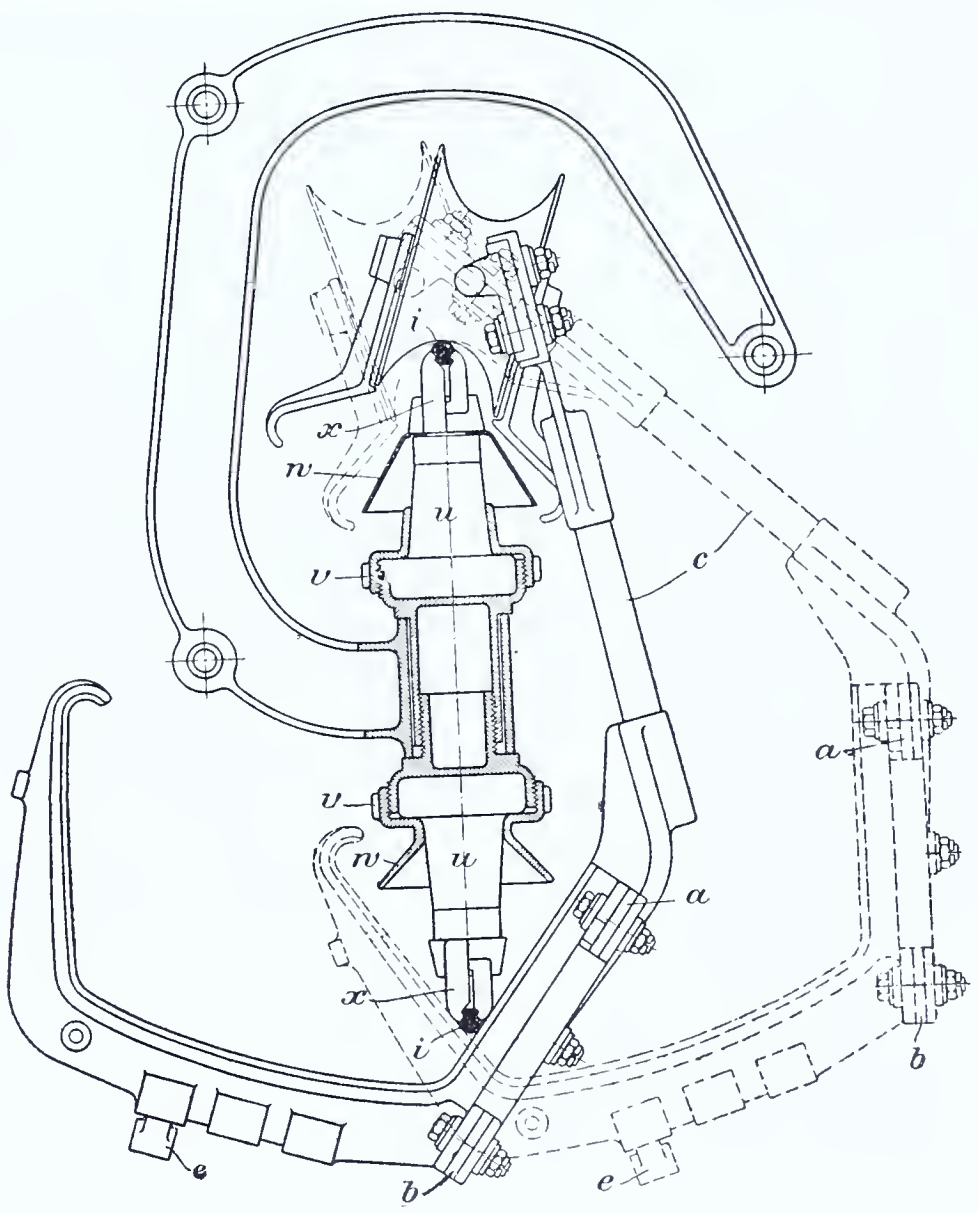


FIG. 2.—DETAILS OF SUSPENSION DEVICE.

The current collector is a combination of a trolley wheel collector and bow collector. The collector for this work must be light and yet very flexible to side pulls, so as to avoid straining the wires unduly when the car has to move from side to side of the road to pass other vehicles. The wire connecting the collector to the car must also be flexible, and must adjust its length automatically to meet the varying conditions. It must also be elastically attached to the collector, so as to avoid overrunning at starting and stopping. The device used is fulfilling these conditions. The two trolley wheels at the top are 12 inches apart, and are carried on a C-shaped arm which also carries the aluminium bow collectors for the lower wire, the two collectors being insulated from one another. The central carrier has two 11 inch hinged arms attached to it, which carry the two aluminium bows at their ends. The springs exert a pressure of about 3½ pounds against the wire, and they allow the bows a limited upward and downward motion. The motion which permits the whole collector to move a considerable distance from side to side without danger of damage, not only prevents sideway strain on the lower wire, but also enables the aluminium bows to wear all over uniformly instead of in grooves. The weight of this collector is 12 pounds, and in order to insure smooth running and freedom from jerkiness, the collector is connected to the cable from the car through a pair of two foot hinged steel tubes. The end of one tube is connected to the collector through flexible cables, and a double pole swivelling contact maker, while the other end is connected to the car through the double collecting cable, and a cord to take strain. The hinged tubes are normally closed together under the action of the spring, but when the car starts, turns, etc., the arms open more or less, and prevent shocks being transmitted to the collector itself. The collecting cables pass down an upright arm on the top of the car to a spring controlled cable-drum, which keeps the cable taut, and from which the current is conveyed to the motor through rubbing contacts. The whole arrangement has been found quite satisfactory in practice.

Mention may be made of the method adopted for crossing a double track tramway line by the railless line. In order to facilitate matters at this point, all the lines are made dead for a radius of 12 feet from the crossing point, by the insertion of ordinary section insulators in the case of the tramway lines, and by the interruption and insulation of the ends of the positive line, in the case of the railless line. The ends of the positive line are attached through insulators to the cross piece of the tram line. A small gap, 1¼ inches wide, is left in the cross piece through which the arm of the C-shaped railless collector can pass. The 12 foot radius gap at the crossing place is usually passed without current, but if, by accident, a car should stop on the dead section, it is only necessary for the driver to draw the collector by hand either forward or backward onto the live portion of the line, in order to obtain a supply again.

Submerged Rail for Canal Boats.

A novel method of towing barges, in which the tow boat operates on a submerged rail, has beeu recently tried in Germany. Because of the economy and simplicity of the system, and because it minimizes the disturbance of the bottom and sides of the canal, thus doing away with the need of dredging, it commends itself. As described in a late number of *Popular Mechanics*, the single rail on which the tow boat runs is loosely anchored in the bottom of the canal in such a manner that it can be easily lifted even higher than the surface of the water when repairs are to be made, without disturbing any of its joints or anchorage, while at the same time any excessive displacement in a horizontal direction is prevented by the particular method of anchorage in use. Four trolley wheels, mounted under the towboat and driven by electric power, grip the head of the rail between them, normally lifting it a couple of feet above the bottom. So lifted, the weight of the rail gives friction or tractive force to the trolley wheels, thus reversing the means of traction of the ordinary railroad, in that the tractive power is provided by the weight of the suspended rail instead of by the weight running over it.

In the experiments it was found that seventy-five per cent of the electrical energy consumed is transferred into motive power, and that a saving of fifty per cent in cost of towage is effected. The power, it is expected, will be taken from an overhead wire. The tow boat can be very small, as its size has nothing to do with its towing capacity, and it can therefore be lifted from the water for repairs, when desired.

CLEVER NEW PATENTS.

SOD CUTTER—COMBINED WINDMILL DERRICK AND RESERVOIR—COMBINED COFFEE AND TEA POT.—DUPLEX FOUNTAIN PEN.

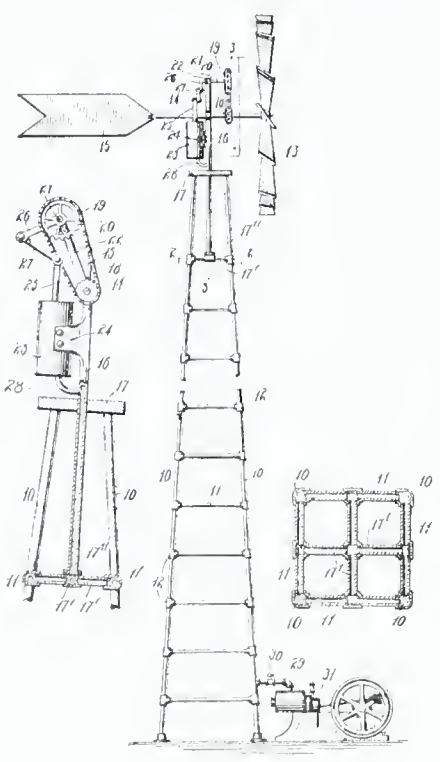
Sod Cutter.

The difficulty of cutting sod and lifting the sections intact from the ground has led to the invention of an ingenious device for this purpose. William H. Laude, of Monticello, Iowa, has an implement which is adapted for cutting turf and for handling it without injuring the structure. The construction of the tool is shown herewith, and it will be seen that it is operated much as is a spade, cutting blades being provided at the lower ends of arms which taper to form bearing elbows 14. The blades 15 extend back at an acute angle to the arms and are of a length to cut to a depth of nine inches. The operator forces the elbow ends of the members 14 down through the turf a distance to secure a solid rocking bearing for the implement, and then bears down on the tool and swings it forward, making forwardly extended edge cuts of the sod. It is clear that by moving the elbow ends of the cutter along the edge cuts thus made, the length of the cuts may be continued as desired. For loosening the cut sod, the tool is turned at right angles to the first position, and one of the cutter blades entered flatwise under the sod so that the latter can be rolled, as seen in the small figure at the bottom of the cut. The blade ends can be utilized as a rake to pull and roll over the loosened cut end of the sod. It will be seen that this same implement can be used by tilers who dig drains, or for any similar purpose.



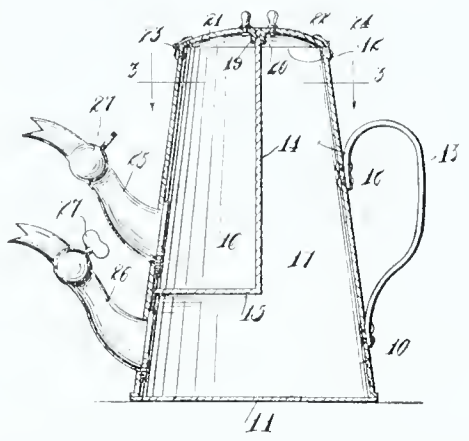
Combined Windmill Derrick and Reservoir.

A windmill having a derrick formed of tubing adapted to form a compressed air reservoir has been patented by Oscar F. Ericson, of Stratford, Iowa. Reservoirs and tanks have already been used to support windmills equipped with air compressors for storing air in the reservoirs, but this type of construction has the disadvantage of offering resistance to heavy winds. The new arrangement obviates this by providing a skeleton derrick, the air compressor being situated at the top of the derrick and delivering compressed air into the tubular uprights. As seen in the accompanying cuts, the uprights are connected by cross braces, each upright being formed of short tubular sections connected by fourway unions. Thus continuous intersecting ducts are presented, and the derrick so formed constitutes a reservoir. A wind wheel 13 having a shaft and vane is supported on a hollow pedestal projecting through the platform and swivelled to the cross braces 17¹. The shaft 14 has a pinion connected by sprocket gear and chain to the crank shaft 21. A compressing cylinder 23 has its piston connected with the crank shaft through the pitman 27. A feed pipe connects the cylinder with the hollow pedestal. When the piston is actuated, the air will be compressed and fed into the reservoir of the derrick. To draw off the air, an outlet pipe 29 controlled by a valve is secured to the lower end of one of the uprights, and this pipe may be connected to a compressed air engine, or to other desired machinery. It will be seen that the device is practical, and at the same time presents advantages over the forms of structure generally in use.



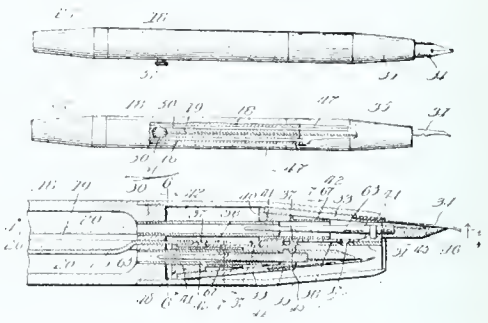
Combined Coffee and Tea Pot.

In these days when so many people are living in apartments, and economy of space is desirable, there is a growing tendency to combine utensils intended for different purposes. An invention by which the same pot can be made to serve for coffee and tea will at once commend itself as sensible and practical. It is by James R. Beasley, Lynchburg, Va., and as shown in the drawing herewith, the result is effected by dividing the body of the pot into separate compartments, each having spouts with valves. The bottom 15 of the partition, as seen, terminates above the bottom of the main body and forms a passage between the partition 14 and the adjacent portion of the body to which the handle is attached, thereby providing separate entrance openings through which the coffee and tea may be placed in separate compartments and supplied with water. The partition 14 projects slightly above the upper edge of the body 10 at the entrance opening 12 and can be engaged by latches on the covers of the two compartments, which are hinged on opposite sides of the body. Spouts are provided opposite the handle, each having a suitable valve to permit the contents of that compartment to be poured or withheld, as desired. It is clear that by this simple device, two kinds of beverages can be dispensed at the same time with great convenience and facility.



Duplex Fountain Pen.

Something new in the way of a fountain pen which can be supplied with two kinds of ink and yet can be used with the facility of a single pen, has been patented by George A. Cooper, of Oak Park, Illinois. The barrel of the pen is divided by a partition into two reservoirs, which can be filled with ink through openings in the end, which are plugged and covered with a cap 24. One of the reservoirs is larger than the other, and the partition extends through the writing end of the barrel to make a guide bar 31 for the pen point feed chambers 33, in the ends of which the points are mounted. These points can be alternately shifted into and out of writing position. The feed chambers are supported by the extension 35, and slidably connected to the guide bar by screws which extend through slot 38. When each chamber is slid forward to project its pen point into writing position, the engagement of the tapered surfaces of the extension and chamber constitutes a stop to limit the outward movement. Ink runs from the reservoir to the feed chambers through feed tubes 42, and from there to the pen points in the usual way. The feed chambers can be shifted from writing to non-writing positions by means of the actuating bar 47, which is operated through racks and pinions, and the knob 57 located on the outside of the barrel, as shown in the top figure. Tapered pins fixed to the end walls of the feed chambers and extending into the feed tubes, serve to cut off the flow of ink when the chambers occupy their non-writing positions. To keep ink from escaping from between the rear walls of the feed chambers and the feed tubes, tubes are provided on the rear walls, which extend inwardly and serve as guards to hold the ink when the writing end of the pen is directed upwardly.



PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

AMERICAN STEEL & WIRE CO. OF NEW JERSEY v. DENNING WIRE & FENCE CO.

(Circuit Court of Appeals, Eighth Circuit. Jan. 12, 1912. 194 F. R. p. 117.)

1. PATENTS—INFRINGEMENT-MODE OF OPERATION—EQUIVALENCY OF MACHINES.

While it may not be said as matter of law that a machine which operates continuously cannot be the equivalent of one which operates intermittently, when the machines are complex, the difference in the mode of operation is very strong evidence that there is such a difference in them as will avoid infringement.

2. PATENTS—INFRINGEMENT—WIRE FENCE MACHINE.

The Bates patent, No. 577,639, for a wire fence machine, covers a combination of four mechanisms, each of which performs a separate part in the production of the fence and works intermittently, the first two simultaneously, followed by the third and fourth working successively. Such patent held not infringed by a machine in which all the mechanisms operate continuously and simultaneously.

WINSTON v. CROTON FALLS CONST. CO.

(Circuit Court of Appeals, Second Circuit. Jan. 8, 1912. 194 F. R. p. 123.)

PATENTS-INVENTION-APPARATUS FOR MAKING CONCRETE BLOCKS.

The Winston patent, No. 849,824, for an apparatus for making concrete blocks, comprising a platform movable along a trackway and a plurality of molds between the rails and on either side of such trackway into which concrete may be shoveled from the platform, all the parts of such apparatus being old, does not disclose patentable invention.

UNION PAPER BAG CO. et al. v. ADVANCE BAG. CO.

(Circuit Court of Appeals, Sixth Circuit. Jan. 3, 1912. 194 F. R. p. 126.)

PATENTS — INFRINGEMENT — PAPER BAG MACHINE.

The Dulin patent, No. 578,550, for a paper bag machine, covers an invention the essential feature of which, as stated by the patentee, is "the rotating and coacting device for distending the blank to the diamond form," an essential element of such device as shown and described on each claim being a lower central gripper, and the patent is not infringed by the device of the Bartholomew patent, No. 736,673, which employs no lower central gripper and no mechanism which is an equivalent therefor.

WILLIAM B. SCAIFE & SONS CO. v. FALLS CITY WOOLEN MILLS.

(Circuit Court, W. D. Kentucky. Jan. 18, 1912. 194 F. R. p. 139.)

1. PATENTS—VALIDITY AND INFRINGEMENT—WATER-PURIFYING APPARATUS.

The Greth patent, No 775,901, for a water-purifying apparatus, is void for anticipation or for lack of patentable invention in view of the prior art which disclosed all of the elements of the combination in practically similar combination, requiring no more than mechanical skill to make the improvements claimed; also, held not infringed, if conceded validity.

2. PATENTS—INFRINGEMENT—IMPROVEMENT PATENTS.

A patent for an improved combination of old elements is limited to the very combination shown, and is not infringed by a new combination in which any one of its elements is omitted and no mechanical equivalent substituted; and in such case the range of equivalents is narrow.

GAMEWELL FIRE ALARM TELEGRAPH CO v. MAYOR AND COUNCIL OF CITY OF BAYONNE, N. J.

(Circuit Court, D. New Jersey. Jan. 25, 1912. 194 F. R. p. 147.)

1. PATENTS — VALIDITY AND INFRINGEMENT—FIRE ALARM SIGNAL BOX.

The Ruddick patent, No. 553,873, for a noninterferenee signal apparatus designed to prevent a confusion of signals where two or more fire alarm signal-boxes are pulled at the same time, and which covers a combination of elements for sending successive signals by which when a box is pulled, the signal is withheld from transmission during the period when the line circuit is not clear, but is automatically started and transmitted as soon as the line is clear, was not anticipated and discloses patentable novelty and invention; also held infringed.

2. PATENTS — VALIDITY AND INFRINGEMENT — FIRE ALARM SIGNAL BOXES.

The Cole patent, No. 553,839, for improvements in noninterference signal apparatus, being for mechanical improvements in the apparatus of the Ruddick patent, No. 553,873, held valid and infringed.

LOGGIE v. PUGET SOUND MILLS & TIMBER CO.

(Circuit Court, W. D. Washington, N. D. Jan. 15, 1912. 194 F. R. p. 158.)

PATENTS—VALIDITY AND INFRINGEMENT—SAWMILL APPARATUS.

The Loggie patent, No. 837,087, for a receiving trip and conveyer used in the manufacture of weather boards, claims 6, 7, and 8, are valid as limited to a two-part guide constructed according to the specification, in combination with a planing machine and a transverse conveyer. Claims 1, 2, 3, 4, and 5, which omit the first section of such guide, are void for lack of utility. Claims 6, 7, and 8 held infringed by one form of apparatus used by the defendant, but not infringed by a modified form of construction.

IMPERIAL BRASS MFG. CO. v. NELSON.

(Circuit Court, N. D. Illinois, E. D. Jan. 8, 1912. 194 F. R. p. 165.)

1. PATENTS—ANTICIPATION—PRIOR KNOWLEDGE BY OTHERS.

Knowledge by others of a device before its alleged invention by an applicant for a patent in a form adapted to practical use constitutes an anticipation, and renders it unpatentable under Rev. St § 4886 (U. S. Comp. St. 1901, p. 3382), although it was not used, and such knowledge need not have been more than two years before the date of the application.

2. PATENTS—ANTICIPATION-PIPE COUPLING.

The Burgess patent, No. 906,099, for a pipe coupling is void for anticipation because of prior knowledge of the device by others than the patentee.

LUTEN v. RHOADS & KNISLEY et al.

(Circuit Court, M. D. Pennsylvania, Jan. 20, 1912. 194 F. R. p. 169.)

1. PATENTS — SUIT FOR INFRINGEMENT—GROUNDS OF SUIT.

A patentee may maintain a suit in equity to enjoin infringement of his patent by a contractor for the building of a structure which, if built in accordance with the plans and specifications attached to the contract, will infringe, and is entitled to recover costs, although the plans are afterward so modified as to avoid infringement.

2. PATENTS — VALIDITY AND INFRINGEMENT—CONCRETE ARCH.

The Luten patent, No. 852 970 for improvements in concrete arches, claim 46, held valid and infringed.

NEENAN v. OTIS ELEVATOR CO.

Circuit Court of Appeals, Second Circuit. Jan. 9, 1912. 194 F. R. p. 414.)

1. PATENTS—CONTRACT OF ASSIGNMENT—CONSTRUCTION.

Under a contract by which complainant assigned certain patents relating to elevators to defendant, a builder of elevators, which required defendant to test the patented apparatus with reasonable diligence, and if such test proved satisfactory "within such further reasonable time as is convenient to put such apparatus into practical use" and to pay royalties thereon, the test having proved satisfactory, complainant was entitled to have the inventions exploited during the life of the patent and within a reasonable time.

2. PATENTS—CONTRACT OF ASSIGNMENT—RESCISSION IN EQUITY.

The failure and refusal by a defendant, although continuously building and installing elevators, to make any practical use of such invention for five years after the making of the contract, was a violation both of its spirit and letter which entitled complainant to its rescission in equity; there being no rational rule of damages which would afford an adequate remedy at law.

CLARK BLADE & RAZOR CO. v. GILLETTE SAFETY RAZOR CO.

(Circuit Court of Appeals, Third Circuit. Feb. 1, 1912. 194 F. R. p. 421.)

1. PATENTS-VALIDITY AND INFRINGEMENT—SAFETY RAZOR.

The Gillette patent, No. 775,134, for a razor having a detachable blade of such thinness and flexibility as to acquire external support to its cutting edge, was not anticipated, and covers a device both original and generic; also, held infringed.

2. PATENTS— VALIDITY — PROCEEDINGS IN PATENT OFFICE.

The withdrawal of an application for a patent and the substitution of another is proper procedure where the inventions claimed are identical, and the second is merely an amplification of the first.

3. PATENTS — VALIDITY — SUFFICIENCY OF CLAIMS.

A claim of a patent is not invalid because the thing claimed is not in itself an operative device, but only an element of one.

DE LAVAL SEPARATOR CO. v. IOWA DAIRY SEPARATOR CO.

(Circuit Court of Appeals, Eighth Circuit. Feb. 27, 1912. 194 F. R. p. 423.)

1. PATENTS—ANTICIPATION — SUFFICIENCY OF EVIDENCE.

The existence and use of an unpatented anticipating device prior to the invention patented may be established by oral testimony only by clear and satisfactory evidence sufficient to prove the facts beyond a reasonable doubt.

2. APPEAL AND ERROR—REVIEW—FINDINGS OF CHANCELLOR PRESUMPTIVELY RIGHT.

When the chancellor has considered conflicting evidence, and made his finding and decree thereon, they must be taken to be presumptively right; and unless an obvious error has intervened in the application of the law, or some serious mistake has been made in the consideration of the evidence, they must be permitted to stand.

3. PATENT No. 892,999 TO LJUNGSROM VOID.

Claims Nos. 4, 5, 6. 7, and 8 of letters patent No. 892.999, for improvements in liners for centrifugal bowls for separating cream from milk, issued to Fredrik Ljungstrom July 14, 1908, on an application filed Jan. 18, 1905. were anticipated by a bowl that was made, tested, and found satisfactory by Wilbur W. Marsh, and put into actual use in the autumn of 1903.

SHEFFIELD CAR CO. v. D'ARCY.

(Circuit Court of Appeals, Sixth Circuit. Feb. 13, 1912. 194 F. R. p. 686.)

1. PATENTS—INVENTION — SPRING CUSHION STRUCTURE.

The D'Arcy patent, No. 726,817, for a spring cushion structure, claim 3, which covers a combination in such a structure of "upright hellically-coiled spring and strip of sheet metal with inturned opposite edges folded onto and embracing the opposite sides of the bottom coil of said spring, whereby said spring is supported and retained in position," fairly construing such language, refers broadly to the function of the metal strip in such combination in supporting and retaining the spring in an upright position by folding over the inturned edges to embrace the bottom coil of the spring, without including as a limiting element of the combination the separate function of the strip as a cross-piece in the seat or cushion frame, and, as so broadly construed, the claim was fully anticipated by the Crandall patent, No. 1,412, for a bed spring, which shows a series of sheet metal plates attached to a wooden slat, each retaining and supporting a single spring in the same manner as the strip of the D'Arcy patent. If the claim be construed as including the function of the metal strip as a cross-piece, still no patentable invention was involved in uniting the plates of the Crandall device into a single metallic strip, and giving it the functions of both the plates and a metallic cross-piece well known in the art.

2. PATENTS—INVENTION — COMBINATION OF OLD ELEMENTS.

A combination of old elements to be patentable must produce a new force, effect, or result of the product of the combined forces as distinguished from a mere aggregation of the results of the old elements, each working out its separate effect.

3. PATENTS—INVENTION—COMBINATION.

Although a device formerly made in two pieces is made in one piece if the elements operate in no different way, and have no different relation to each other when in a self-contained form than when one element is detached, the combination is not patentable.

4. PATENTS — REVERSAL — DISPOSITION OF CAUSE.

On a broad appeal taken under Act March 3, 1891, c. 517, § 7, 26 Stat. 828 (U. S. Comp. St 1901, p. 550), from an interlocutory decree of a Circuit Court granting an injunction, and ordering an accounting in a patent case, the Circuit Court of Appeals may, in order to save both parties from the expense of further litigation, not merely reverse so much of the decree as awarded an injunction, but may also consider and decide the case on the merits, and direct a final decree dismissing the bill.

PHŒNIX KNITTING WORKS v. HYGIENIC FLEECED UNDERWEAR CO.

(Circuit Court of Appeals, Third Circuit. Jan. 8, 1912. 194 F. R. p. 696.)

PATENTS-INVENTION-DESIGN FOR MUFFLER.

The only feature of the design shown in the Mead patent, No. 39,347, for a design for a neck scarf, which was subject to a patent under Rev. St § 4929, as amended by Act May 9, 1902, c. 783, 32 Stat. 193 (U. S. Comp. St. Supp. 1909, p. 1274), which authorizes the granting of a patent for a "new, original and ornamental" design, was in the configuration and surface ornamentation of the two connected aprons forming the front portion of the scarf; the connecting neck portion being functional only and not visible when the scarf is worn. As so construed, the patent is void for lack of invention and novelty in view of the prior art.

PHŒNIX KNITTING WORKS v. RICH et al.

(Circuit Court, N. D. Ohio, E. D. July 22, 1911. 194 F. R., p. 708.)

1. PATENTS—DESIGNS—SUFFICIENCY OF APPLICATION.

The practice of the Patent Office in requiring the omission of a detailed verbal specification from applications for design patents is not to be commended, it being doubtful whether such an application meets the requirements of Rev. St. § 4886 (U. S. Comp. St. 1901, p. 3382), and section 4929 as amended by Act May 9, 1902, c. 783, 32 Stat. 193 (U. S. Comp. St. Supp. 1909, p. 1274), that all applications shall contain a "written description" of the invention.

2. PATENTS—DESIGNS—INFRINGEMENT.

When a design invention consists in nothing more than the bringing together of elements old in the art with slight modifications of shape in adapting or adjusting them to each other, the patentable novelty is only in the slight departure of form, and any subsequent use of the same basic elements with a variation of form of adaptation departing, to the discernment of an ordinary observer, from the slight change employed in the patent, is not an infringement.

3. PATENTS—VALIDITY AND INFRINGEMENT—DESIGN FOR NECK SCARF.

The Mead design patent, No. 39,347, for a design for a neck scarf, is limited to the combination of a scalloped longitudinal edge and two transverse series of stitching at angles to each other in a scarf of the general kind described and is void for anticipation. Also, held not infringed, as so construed, if conceded validity.

STARR v. HOUSER et al

(Circuit Court, S. D. Ohio, W. D. July, 18, 1911. 194 F. R. p. 730.)

PATENTS—VALIDITY AND INFRINGEMENT—ELLIPSOGRAPH.

The Starr patents, No. 533,095, for an ellipsograph, No. 683,809, for an ellipsograph having a bevel cutting tool for making picture mats, etc., and No. 766,158, for an ellipsograph with a tool for cutting glass or metal, were not anticipated, and all disclose invention of high order; also all held infringed.

MECHANICAL INVENTIONS AND DESIGNS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Jesse S. White, Merigold, Miss. Riding Attachment for Plows.—This invention has for its object to provide a riding attachment adapted to be connected with any common walking plow to enable the operator to ride while plowing. The attachment, which is also designed for use in connection with stalk cutters, fertilizer distributers, road and ditch graders and analogous implements, is adjustable to accommodate the same, and it enables the plow to be easily and conveniently handled. The attachment comprises in its construction a wheeled frame, a hanger mounted on the frame and provided with a depending hanger rod, and a coupling supported by the rod and having forwardly and rearwardly extending portions arranged to receive a whiffletree and the clevis of a plow or other device.

Edgar Love, Darlington, Ind. Fence Clamp.–This invention relates to fence clamps of that class employed in connection with woven wire fences, the clamp being used to grip the wire during the stretching of the same. As is well known, when constructing a woven wire fence, it is difficult to stretch the woven wire, and many attempts have been made to devise a clamp adapted to be used in connection with a stretcher. The present invention accomplishes this result in a simple and efficient manner. The device consists of two parallel substantially V-shaped clamping members arranged one within the other, a plurality of spaced base plates extending across and along the inner member, stirrups embracing the members and having their free ends detachably connected to the base plates, and cams connected to the outer ends of the stirrups and operating against the outer clamping member for drawing the said members together. Chains are provided for connecting the base plates with a wire stretcher of ordinary or any approved construction.

Zachary M. Lindley, Avilla, Mo., inventor; Robert M. Sloan, Carthage, Mo., assignee. Two patents. Foldable and Adjustable Harrow and Rotary Pump.—It is the aim of the first-named invention to provide a harrow equipped with a plurality of sections, which are adapted to be arranged in compact form for shipping and storing, and may be readily adjusted to vary the width of its sections and also the distance between the rows of teeth so as to adapt the harrow to the varying conditions of the soil and the plants under cultivation. The harrow teeth may be clustered or grouped either at the center of the harrow, or at either ride of the same, to arrange them to perform the required work at the desired points, and the position of the teeth may be changed without adjusting or changing the fastening devices for securing the teeth to the harrow sections. The harrow may be adjusted to present either the front edges of the teeth to the soil for cutting down sod and pulverizing the soil, or the side faces of the teeth may be presented to the front to secure a disk-like action for moving the soil laterally to destroy young grass, weeds, etc. The harrow includes broadly a series of longitudinally disposed tooth-carrying bars, means for connecting the bars to permit their lateral adjustment and to maintain them in a parallel relation during such adjustment, and longitudinally adjustable diagonal braces extending from the center of the corners of the harrow and rigidly retaining the tooth-carrying bars in their adjusted positions.

The object of the second-named invention is to provide a pump structure designed for pumping oil or water, compressing air and analogous operations, and equipped with a continuously rotating head carrying a reciprocatory piston or plunger movable transversely of the rotating head to take in the material at the inlet port and discharge the same at the outlet port, and operated by mechanism capable of reciprocating the piston or plunger while the same is at the opposite inlet or outlet ports, and of holding the piston or plunger stationary with respect to the rotating head while the former is traveling between the inlet and outlet ports. The pump is also provided with means for storing power during the periods when the piston or plunger is traveling between the inlet and outlet ports, and for expending the power to assist the capacity of the engine or other motor for actuating the pump, whereby the capacity of the engine necessary to operate the pump is reduced practically one-half. The rotary pump or plunger is provided with means for maintaining a liquid or air tight fit or connection between the rotary head and its casing, and it also has means for adjusting the piston or plunger to maintain a liquid and air tight fit between the ends of the piston or plunger and the outer casing while the former is traveling between the inlet and outlet ports, so that a full discharge of the fluid will be carried from the inlet to the outlet port and completely discharged at the latter without returning any of the liquid to the inlet port.

Charles W. Cochran, Athens, Tenn. Pencil Holder Attachment.—The aim of the invention is to provide an attachment for telephone desks, whereby a pencil may be held within convenient reach so that the noting of telephonic messages may be made without delay. The invention is, however, susceptible of a more extended use and could be employed in various other relations. It consists of a base, and a coil spring having the terminals of the wire forming the spring secured to the base at opposite sides of the spring and beyond the sides thereof, said spring being arched above the base, and also having its coils arranged on a curved line from end to end of the spring in a plane parallel to the top of the base, the ends of the spring being open, whereby when a pencil is inserted longitudinally through the spring, frictional contact is established between the pencil and the coils of the spring. The invention is exceedingly simple and useful, and should commend itself to all who may have use for a device of this character.

Thomas H. Raney, Chapel Hill, N. C. Two patents.—The first invention relates to a machine for applying caps to cans, being particularly designed for use in the home when canning fruit. Its object is to provide a simple and inexpensive hand-operated device by means of which the well-known friction caps may be readily and easily applied to the cans, the device being constructed to accommodate cans of different heights and diameters. It consists of a U-shaped base formed of a single piece and having its upper face provided with a stepped series of correspondingly-shaped recesses having successively increasing diameters, thereby providing a plurality of U-shaped rests arranged in different horizontal planes and which open out at the open side of the base and are adapted to receive and hold from lateral movement can bodies of various diameters a rigid standard rising from the base at the closed side, and an operating lever pivotally connected to the standard and provided on its under side with a presser head adapted to engage the can caps.

The invention of the second patent relates to a screen adapted to be used for windows, transoms, doors and the like, and the particular object is to provide means for access through the screen to outside shutters, awning cords, and other exterior equipment for the operation of the same without the necessity of removing the screen bodily, or raising the same and thus leaving a large opening for the entrance of insects. It consists of a window screen having an opening therethrough, a track spanning the screen frame and projecting laterally from the plane of the screen, a screen panel disposed against the face of the screen over the opening and sliding on the track, and supporting wires spanning the screen adjacent the rails of the track and slidably connected to the screen panel, said supporting wires being connected at the ends to the opposite stiles of the screen frame.

James J. Schofield, Martinsville, Ind. Trap Setting Device.—This invention relates to devices for assisting in the setting of spring steel jaw traps; the object being to provide means which can be operated quickly without any danger of injury to the hand of the operator. The invention consists of a pair of spaced pivoted members, each having a handle adapted to be jointly gripped by the hand when setting the trap, one of the members being relatively stationary and provided with an outwardly extending offset support to engage beneath the lower leaf of the spring of the trap, the other member being pivoted on the relatively stationary member above the support and provided with a foot adapted to bear upon the upper leaf of the spring for compressing the spring of the trap.

Charles W. Kennedy and Eric Carlson, Schenectady, N. Y. Inclinometer.—This invention has for its object the provision of a device by which the angle of inclination of any surface may be quickly noted, the device being of very simple construction, so as to be operated easily and accurately and the frictional resistance offered the moving parts will be reduced to a minimum. The invention comprises a body having a substantially circular chamber, a stationary disk secured to the body to cover said chamber, a loose dial arranged in front of said disk, a pendulum arranged within the chamber of the body, means for connecting the pendulum to the loose dial to cause them to move in unison, said means constituting the pivot of said parts, a series of graduations of 180 degrees marked upon the top half of of the dial, and a series of graduations of 180 degrees marked upon the lower half of the chamber of the body.

Robert D. Whitt, McNeill, Ark. Harrow.—The object of this invention is to provide a harrow which may be readily attached to any ordinary plow stock, and which, when in use, will travel smoothly and easily over the ground without any lateral twisting movement. The invention is of a simple character so that it may be applied by an unskilled person and without the use of any complicated tools. It consists of a V-shaped frame, a straight connecting plate secured to the front point of the said frame and extending rearwardly therefrom and having its rear end formed into a lip adapted to bear against the front side of a plow stock, and a V-shaped brace secured at its rear ends to the frame and having its central portion extending across and lying against the said lip, whereby both the said lip and brace may be secured to a plow stock by the same fastening means.

Clifford G. Sweet, San Diego, Cal. Casing for Rosin.—This invention relates to means for the application of rosin to violin and other like bows, and its object is to avoid the friction incident to the drawing of the hairs of the bow over a block of rosin in the customary way. The rosin is constructed in the form of a cylindrical block mounted in a protecting casing, which casing may be opened to expose the rosin and closed to protect the same. The block is rotatably mounted in place with the result that the movement of the bow over the block causes a like movement of the said block where engaged by the bow, so that no friction is caused to an extent detrimental to the hairs of the bow. The movement of the rosin block under the impelling action of the bow causes a reduction of the surface of the block to a powdery or dust-like form, and this surface ultimately reaches the hairs of the bow in the form best adapted for imparting to the strings of the instrument to be played the tone qualities desired. The invention is of an exceedingly novel character, and being devised by a musician bears the stamp of a trained and skilled mind in its construction.

William A. Jordan, New Orleans, La. Window Lock.—This invention relates to a sash lock, though it can be employed with equal success in other relations. The object of the invention is to provide a catch which will operate automatically upon the closing of the sash to lock the same, and will be readily unlocked upon the raising of said sash. The invention is applied to the bottom rail of the sash, and to permit this to be done, the bottom rail is provided with a pocket, and a recess is formed in the lower portion of the rail and communicating with said pocket. A substantially elliptical casing is adapted to be carried by the sash and is fitted within the pocket, said casing comprising ing an inner wall, a connecting peripheral wall, and a front flange, said peripheral wall having an opening at the bottom. A fixed catch is adapted to be secured to the sill or other fixed part directly below the said bottom opening. A substantially U-shaped gravity arm is arranged within and has a shape approximating one-half the casing, said arm being pivotally mounted at its upper end at the top of the casing and arranged partially along and spaced from the top of said peripheral wall, then extended down and spaced from the end of the said peripheral wall, and then down part way along and spaced from the bottom of said peripheral wall, the lower end of the arm projecting through the opening of the said peripheral wall and terminating in a hook which is adapted, when the sash is closed, to automatically engage the fixed catch and thereby lock the said sash.

Joseph M. Horton, Fillmore, Cal. Knock-down Table.—The object of this invention is to provide a table which may be readily adjusted in order to economize space in storage or transportation, and which when set up will be strong and steady. It consists of a top having sockets in its underside, a series of legs, vertical rods fitted within the upper portions of the legs, transverse bars projecting from and formed integral with the rods and extending across the upper ends of the legs, each of said bars having its outer end formed with a hook to engage the sockets of the top, while the other ends of the bars bear against the underside of the top, and means for tying the legs together in pairs.

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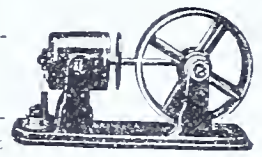
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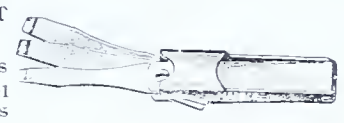
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WASHINGTON, D. C., OCTOBER 1, 1912.

ERRORS OF THE PATENT OFFICE.

We have had occasion before to comment upon the errors of the Patent Office. In the INVENTIVE AGE for May, 1912, we referred to a decision of the Court of Appeals of the District of Columbia, reversing the action of the Commissioner of Patents and authorizing the reinstatement of an application for patent on a flying machine which the Patent Office had held to be abandoned, in the year 1903, because of the failure of the inventor to make an actual demonstration of operativeness of his invention. This decision brought to light the fact that for many years the Patent Office pursued the policy of rejecting applications for patents on flying machines or aerial vesels which were not provided with a balloon attachment, the Patent Office holding in each instance that because no successful attempt had been theretofore made to rise from the earth's surface by means of an aerial vessel provided with a balloon, therefore the practicability of the apparatus was problematical and actual demonstration was necessary before the grant of a patent. When the Wright Brothers and others demonstrated that a person could fly without a balloon attachment, the Patent Office ceased its fatuous policy of rejecting every application, and now they no longer require an inventor to make an actual demonstration of his flying machine.

We have now to record another change in the practice of the Patent Office which was brought about by the decisions of several courts which criticised the Patent Office for its practice in applications for design patents.

The Revised Statutes, section 4993, provides that "all the regulations and provisions which apply to obtaining or protecting patents for inventions or discoveries, not inconsistent with the provisions of this title, shall apply to patents for designs." This reference necessarily includes section 4888, which provides that before any inventor shall receive a patent for his invention, he shall "file in the Patent Office a written description of the same."

This would seem to require that an application for a new design shall include a *written* description of said design, and a design patent without a "written description" would appear to be invalid; but the Supreme Court held in a case (Dobson vs. Dornan 118 U. S. p. 10) in which this point was raised, that the design patent was not void because of its failure to contain a written description. Therefore, a design patent without a written description is not void. This fact, however, did not justify the Patent Office in holding, as they did about the year 1903, that "written descriptions in design patents were not only unnecessary but also confusing and misleading."

Up to the time that the Patent Office inaugurated the practice of refusing to allow descriptions in applications for design patents, the Patent Office had always permitted such descriptions to appear, and no one was ever confused or misled by the descriptions. In many cases, unfortunate results flowed from the practice of not accompanying the drawing with a written description. It may be true that in *some* instances, a written description may not be necessary, but in many cases it is absolutely necessary, and yet the Patent Office for a period of nearly ten years resisted the desires of applicants to have their design patents accompanied by written descriptions. Petition after petition was taken to the Commissioner of Patents to have descriptions appear in individual cases, but the Patent Office was adamant on this subject. No case seemed to be an exception to their absurd rule. As a result, every design patent that was issued during that period or nine or ten years contained simply a drawing without a description. Many of the design patents were obscure and could not be understood; yet because the Patent Office had decreed that descriptions in all cases were unnecessary, the practice had to be followed. Apparently, the interests of the inventors were lost sight of in the pursuit of this fatuous policy.

Not being satisfied with the decisions of the Patent Office on the subject, a case was taken by an inventor to the Court of Appeals of the District of Columbia, but that tribunal backed up the Patent Office in a decision which held "a superadded verbal description is generally useless and oftentimes confusing."

Apparently, the action of the Patent Office was based upon the decision of the Supreme Court of the United States in Dobson vs. Dornan, holding that a design patent was not void because of its failure to contain a written description, but the rule of *prohibiting* applicants for design patents from insisting upon a written description went far beyond the Dobson case. All that the Supreme Counrt had held was that if the inventor did not supplement his drawing with a written description, he should not thereby lose his patent; his design as shown being tested as a whole; but, by the arbitrary action of the Patent Office, *all* inventors were deprived of the opportunity of adding a written description, even in cases where it might be essential to the preservation of their rights or to the proper enlightenment of the public as to what the patent covered.

No matter is ever settled until it is settled right, and the question came before the Court of Appeals of the District of Columbia a second time in a different case, and this time the practice of the Patent Office was condemned. Since then, the rule has been abrogated by the Patent Office, and an applicant for a patent may now incorporate in his application a written description, if he wants it. In the meantime, hundreds, and we might say thousands, of design patents have been granted, some of them on devices and things which are absolutely unintelligible from the drawing alone.

One of the Federal judges recently commented on the past practice of the Patent Office in no uncertain terms. Judge Killits in the case of Phoenix Knitting Mills vs. Rich et al, 194 F. R. page 708, said:—

> "The practice of the Patent Office in requiring the omission of a detailed verbal specification from applications for design patents, is not to be commended, it being doubtful whether such an application meets the requirements of the Revised Statutes, sections 4888 and 4929, that all applications shall contain a 'written description of the invention.'"

All is well that ends well, and it is hoped that this incident will be a lesson to the officials of the Patent Office, and serve to impress upon them the fact that the rights of inventors should not be subordinated by a too close adherence to technical rules of practice.

AN IMPORTANT COPYRIGHT DECISION.

The Circuit Court of Appeals for the Second Circuit has rendered a decision which is of considerable general interest, as it deals with the Copyright Act of March 4, 1909, and particularly that portion thereof reading as follows:—

> "That the copyright provided in this act shall protect all the copyrightable component parts of the work copyrighted, and all matter therein in which copyright is already subsisting, but without extending the duration or scope of such copyright. The copyright upon composite works or periodicals shall give to the proprietor thereof all the rights in respect thereto which he would have if each part were individually copyrighted under this act."

The suit was brought by the Life Publishing Company against the Mail & Express Company for infringement of its copyright, both companies being located in New York City. As is well known, the Life Publishing Company publishes the magazine called "Life," and it was with respect to certain matter appearing therein that the Mail & Express Company was sued for infringement. The contention of the defendant was that the class of pictures in question were of such a transitory nature that "unless they are separately registered as provided for in the act, they fall within the public domain as soon as they are published." The Court held, however, that a general copyright on a periodical protects the pictures contained therein as component parts of the periodical. Thus, a general copyright on a magazine protects every article, including the pictures thereof, contained within the magazine. The copyright law expressly gives to the owner of the copyright all the rights in respect thereto which he would have if each part of the periodical were individually copyrighted under the act, that is to say, a general copyright on the magazine gives the proprietor of the periodical no less protection than if he were to separately copyright each individual article or picture contained within the magazine. Under the old law, a general copyright of a periodical did not carry with it such extensive protection, and if a person wished copyright protection on a particular picture or article contained within the periodical he was obliged to copyright the article or picture separately. This is not necessary under the new law, which has been in full force and effect since July, 1909. The fact that the Court of Appeals for the Second Circuit has interpreted the law to mean precisely what it says, and has given protection under the law on a strict interpretation thereof, should be particularly gratifying to all copyright owners.

HOW PATENTS ARE LOST BY DELAY.

Many an inventor has lost his right to a patent by delaying the filing of an application for patent. The records of the Patent Office and the courts teem with instances, in which the first applicant for the patent, or the diligent inventor, obtained an award of priority over his more dilatory opponent.

It is perfectly natural that an inventor should wish to perfect his invention before applying for a patent. It is not wise to rush into the Patent Office with an incomplete invention. A reasonable amount of time spent in perfecting an invention is encouraged; but where an inventor elects to delay the filing of an application for patent after his invention is completed, he take grave chances of having his invention appropriated by others, for neither the courts nor the Patent Office are likely to give him much consideration. A case recently decided by the Patent Office furnishes proof of this.

It appears that an inventor by the name of Hawkins was an engineer in the employ of the General Electric Company, the assignee of his application for patent. After he conceived the invention, he entered into an investigation to see whether it would infringe any previously-existing patent. This investigation was made in part by himself and in part by the Washington office of the General Electric Company and continued for several months. In testifying, the inventor said:

When I had turned the case over to Mr. Glenn in order to get the drawings ready for filing, I thought it best not to file the application until the searches Mr. Fairfax and I were then making on the system were completed, or were far enough along to give me accurate information of the bearing of the prior art on my system.

This statement was, in effect, an admission that if the search disclosed a dominating patent, then the invention would be abandoned, and the reduction to practice, if any, would be effected upon the conception of another or different invention.

In the meantime, the opponent of Hawkins, an applicant by the name of Ward, conceived and disclosed his invention and filed an application for patent. Hawkins was therefore the first to conceive the invention, but his opponent (Ward) was the first to file a complete application for patent. The question to be decided in the case was whether or not Hawkins was exercising due diligence in reducing the invention to practice just prior to the time Ward entered the field and subsequently thereto.

It was argued in behalf of Hawkins that he was justified in delaying his actual or constructive reduction to practice until he could determine whether there were any dominating patents; in other words, until an infringement search could be made. The Patent Office held that this contention was not well founded and decided the question of priority against Hawkins and in favor of his opponent. The position of the Patent Office was that it is unfair to allow an inventor who is apparently sleeping on his rights, to stand in the way of a man coming to the Office with the same device and risking the expense and the trouble sought to be avoided by the overcautious inventor, who perfects every small detail and spends months in investigation. It is all very well to go into such scope and validity examinations before manufacturing, but, as before stated, if made before application, an inventor may lose his prior rights.

This decision shows that no excuse of an inventor in delaying the filing of an application for patent will be accepted, where his opponent has, in the meantime, entered the field and filed a complete application for patent and thus constructively reduced the invention to practice. If Ward had not applied for a patent befere Hawkins made his application, Hawkins' right to the invention could not have been questioned, but, because Ward had been diligent in applying for a patent, Hawkins lost his right to the patent, since he had no valid excuse for delaying the filing of the application. The moral of this is that inventors should move with expedition in the conception and completion of their inventions, particularly in the filing of their applications for patents, for delay in completing their applications is apt to work a forfeiture in individual cases.

"Delays are dangerous" is an old maxim which has been worn threadbare by constant use, but it is peculiarly suited to patent applications and should be heeded by inventors.

Turn Waste into Wealth.

The floods that have swept down the thousand miles of the Mississippi Valley this year have been unusual because of the more than ordinary loss of life and property. Each year thousands of settlers patiently retire before the advancing waters, and move their belongings to high land until the flood has passed. Then they return to their water-soaked homes. All this damage and waste might be prevented if a plan suggested in *Popular Mechanics* were followed. The undertaking is so vast that it will probably not be carried out for years, but eventually it doubtless will. If a sufficient number of the controllable tributaries should be dammed to hold back parts of the water released each spring, it would not be difficult to handle the volume flowing down the Mississipi. The cost of this control would run into vast sums, but if the entrained waters were released through turbines and made to produce power, and the same water used over and over again, a sufficiently large revenue might result to meet the interest on the cost of such construction. And if this direct revenue could be supplemented by a part of the saving from that would otherwise be a large loss, the sum total should make the undertaking at least self-supporting. Obviously the plan could be effectively worked out only through Federal cooperation. Perhaps the idea contains a suggestion as to what to do with our convicts. In work of this nature they could be massed and kept employed for months or years in one place, under conditions which would be favorable alike to the state and to the prisoners.

Making Pianola Records.

This is the age of the mechanical piano player, but one great disadvantage to the universal adoption of this particular musical instrument has been its high cost. A Swedish inventor has recently devised an instrument of this class which he calls the melograph, which is built into the piano in the usual way, leaving visible only the roll of paper in which the notes are cut. Anyone can make his own notes for recording. The roll of paper intended for the receipt of tbe record is covered with a waxlike skin. Electric wires run from the keys to knives which, when the keys are depressed, are brought against the paper, and cut lines similar to those produced by the stylus in making a phonograph record, the only difference being that the lines are straight instead of being in the form of a spiral. The notes are recorded upon the paper the instant the key is depressed. As soon as the record is obtained, one is able to reproduce the result. The roll of paper is placed upon a shaft, while every key of the instrument carries a small projecting peg. These latter coincide with the record upon the waxed paper, and when the instrument is started an electric contact is established between a line and its corresponding piano key, which is depressed. The lines on the record vary in length as well as depth, so that an absolutely correct interpretation of the piano score is obtained. If a mistake should be made during the preparation of the record, the error can be corrected as easily as a photo can be retouched. The invention should be of value to composers, who can thus quickly obtain the record of any improvisation. Its adoption should lessen the cost of the instrument.

Artificial Daylight.

The supreme marvel in optics is the manufacture, to order, of daylight. What the United States Bureau of Standards calls "the only artificial illuminant reproducing daylight," has been discovered, and can be manufactured as desired. It is very simple—merely the passage of an alternating electric current through a vacuum tube containing carbon dioxid, but it will last for a year, and can be carried about in a suit case. It is as portable as a phonograph, and is sold by the "window," instead of by the light.

The most common form of this new light rests upon a transformer contained in a box a foot square. The 1-¾ inch tube is of glass bent back and forth upon itself in uniform lengths, and immediately upon closing the switch of the supply circuit, the tube is filled with a pure white light of about 200-candle power, that is remarkably soft and that yet possesses an amazing illuminating power. An ingenious valve automatically feeds the carbon dioxid gas from its container to the tube, as needed. This valve consists of a solenoid acting upon a small iron core within a glass tube. When the core is raised magnetically from the pool of mercury in which it rests, there is exposed above the mercury a tiny carbon plug, through which the gas permeates and thus finds its way to the lighting tube. The operation of feeding or "breathing," occurs about once every minute. There is a cylinder at the right of the feed valve which is the gas generator, turning out very small quantities of gas, and just at the moment these are required. On either side are the electrodes. The standard "windows" are designed for 60 cycle alternating current circuits at 220 volts, but may be modified to suit any desired frequency or voltage. The gas generator will require renewal with the acid and calcium carbonate when the light has been used 1,000 hours. The tube has a life which corresponds to about a year's time in normal operation, and new windows are furnished in exchange for old ones, as needed.

With the aid of this device, operations can be performed at night as easily as in daytime; the oculist can prescribe the kind of windows for people suffering from eye strain caused by working under gaslight or electricity—indeed, oculists claim that eyeglasses can be dispensed with by the next generation, if daylight is generally used for illuminating the hours of darkness: artists and photographers can work for twenty-four hours if necessary, at a stretch, and the explorer in the Arctics can pack his suit case with daylight and shed radiance through the night that is six months long.

Clothes of Odd Materials.

Since the days of the fig leaf, vegetable fibers have been used by man for protecting the body from heat and cold. The use of the skins and wool of animals was the next step in the evolution of clothing, but it has remained for the twentieth century to show us that garments made of minerals have advantages—especially in durability—not possessed by those of other materials. Incredible as it may seem, stone, iron and even glass are now being manufactured into clothes. The latest novelty in women's dresses is represented by robes of spun glass. The cloth, it is said, comes in shades of white, green, lilac, pink and yellow. The inventor of the fabric is an Austrian, and the goods are as bright and flexible as silk. The first lady to wear a glass dress was of royal rank, which ensures the popularity of the material. It was of a delicate shade of lavender shot with pink, and its peculiar sheen reminded observers of the sparkle of diamond dust.

The Russians are manufacturing a fabric from the fiber of a filamentous stone from the Siberian mines, which is said to be of so durable a nature that it is practically indestructible. The material is soft to the touch and pliable in the extreme, and when soiled has only to be placed in a fire to be made absolutely clean.

Iron cloth is largely used today by tailors everywhere, for the purpose of making the collars of coats set properly. This cloth is manufactured from steel wool and has the appearance of having been woven from horsehair.

Wool not the product of sheep is being utilized abroad for men's clothing. This is known as "limestone wool." and is made in an electric furnace. Powdered limestone, mixed with certain chemicals, is thrown into the furnace, and after passing through a furious air blast, it is tossed out as fluffy white wool. When it comes from the furnace the wool is dyed and made into lengths, like cloth. A pair of trousers or a coat made of this material cannot, it is claimed, be burned or damaged by grease, and is as flexible as cloth made of sheep's wool.

Other novelties in clothing include those made from paper and cordage. An English manufacturer has succeeded in making fabric from old ropes. He obtained a quantity of old rope and cordage, unraveled it and wove it by a secret process into a kind of cloth. It is said to be so durable that a large trade has grown up in this line, especially in the British colonies.

Paper clothes were worn by the Japanese troops during the war with Russia, and they were found to be very serviceable and much warmer than those of cloth. Paper dressing gowns, bathrobes and similar articles of attire are now being turned out by the cartload in England, France, Germany and other European countries. The paper of which they are made is of the "blotter" variety. and after being treated by a new process, is dyed in various colors or printed with a pretty floral design. Even gloves are made of paper, the principal claim to advantage being that they are susceptible of being cleaned many times.

A CLASSIFIED list of Patents issued during the month appears in each issue of the INVENTIVE AGE. This keeps inventors and manufacturers posted in the art in which they are most interested.—We will send, postpaid, to any address, printed copies of any U. S. patent, with specifications and drawings, upon receipt of 10 cents per copy.—Please give correct data in ordering.—Address,

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Log turning machine....C. R. Speight
Loom for weaving tufted fabrics....G. F. Hutchins
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Mail box attachment....C. L. Wheeler
Mail matter canceling machine....J. P. Cleal et al.
Map, Road....V. Vallet
Match box....F. A. Fuller
Measure, Shoemaker's....T. A. Bresnahan
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Metal scrap compressing machines, Receiving box for....J. Dunn
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Milking machine....D. Alfven
Miter box....C. Wold
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Mower dust apron, Horse..J. E. Phelps
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Music sheet perforator...A. W. Stonestreet
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Nail machine header....A. E. Convers
Nail, Shoe....G. A. Curtis
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Nozzle, Flushing....H. Robinson
Nut and washer lock, Combined....W. B. Hickey et al.
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Nut lock....E. A. Kamerer
Nut, Lock....G. A. Humason
Nut cracker....J. Stugner
Oar, Bow facing....A. I. Mencher
Oil burning system....F. J. Kaeser
Oil swab holder....C. E. Calkins
Ore concentrator, Endless belt..E. A. Wall
Ore concentrators and apparatus therefor, Feeding endless belt....F. S. Card
Package tie....H. O. Richard
Packing expander, Air brake piston....J. E. Osmer
Packing for shafts, &c....S Z de Ferranti
Packing, Manufacturing journal....H. B. Devlan
Pamphlet covering machine....P. Pachter
Pants or diaper cover, Baby....V. Guinzburg
Paper holder, Wrapping....S. L. Vinson
Paper, Manufacture of parchment..E. Fues
Parachute and the like....B. W. Compton
Pasting device, Wrapper....J. J. Sleeper
Pavements, Expansion joint for concrete....M. F. McCarthy
Pen....F. Bumer
Pencil holder....I. M. Hart
Photographic film developing device....W. R. Ingram
Photographic printing apparatus....W. C. Huebner
Photographic shutter....C. Bornmann
Piano pedal....A. Anderson
Piano playing attachments, Tone regulator for....E. T. Turney
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Pianos, &c., Temperature regulating means for....B. E. Canfield
Picture leaf....R. H. Garman
Piece goods core board....F. E. Keyes
Piles, &c., Device for preserving....W. H. Garlock
Pin tongue and fastening therefor....H. A. Sadler
Pipe case....J. N. Whitehouse
Pipe joint calking machine....C. C. Simpson, Jr.
Pipes and tubes, Apparatus for rifling....C. Fell
Pipes, manufacturing rifled....C. Fell
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Planter and fertilizer distributer, Combined....J. B. Harden
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Planter, Wireless check-row corn..J. Falos
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Plaster board partition stud..W. S. Connell
Plastic coatings distributing joint....A. A. Smith
Plate lifter....W. V. Robinson
Plow....J. A. Huggins
Plow....C. A. Anderson
Plow attachment, Subsoil..J. A. Huggins
Plow, Disk....C. E. North
Plow, Gang....F. Starr
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Plow, Vineyard....T. H. Parvin
Potato digger....J. J. Schubert
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Propeller....D. H. Blake
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Pulley, Self tightening....G. O. Troxel
Pump....C. F., M. F., and L. F. Diaz
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Punch....J. F. Bradshaw
Purse....S. Greenberg
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Push drill....W. A. Peck
Rack cutting machine...W. F. Zimmermann
Rail chair....W. F. Lockwood et al.
Rail connection....G. W. Jones
Rail joint....W. N. Spikes
Rail joint....C. W. Yerbury
Rail joint, Bonding....J. G. Smith
Rail tie plate and fastener..J. H. Miller
Railway cross tie....J. E. Keim
Railway danger alarm, electric....P. W. Mosher
Railway safety appliance, Inclined....J. P. L. Creitz
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Railway switch, Automatic....O. L. Lance
Railway tie....C. G. Blankenburg
Railway tie....C. O. Benton
Railway tie....J. J. Otterbein
Railway tie....J. M. Roe
Railway tie and lock, Steel....J. R. Campbell
Rat trap, Electric....J. Cresko
Razor....G. M. Hiskey
Razor, Safety....D. N. Barrett
Razor strop....W. P. Harthan
Receptacle, Safety....W. Winkelmann
Receptacle, Vacuum wall..O. J. W. Higbee
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Refrigerators, Apparatus for utilizing wells and the like as....T. J. Vanderheiden
Regulating device....C. Chambers, Jr.
Resilient wheel....W. H. Kern
Ribbon feed and movement mechanism....J. B. Secor
Ribbon feed mechanism..B. F. Hutches, Jr.
Road cleaner and smoother...G. U. Davis
Road construction, Portable apparatus for heating a binder for....M. Van Alstyne
Roster, Office....A. L. Glover
Rotary engine....I. Alford
Rotary explosion engine..E. K. Standish
Rotary explosive engine....G. Iochum
Roundabout....N. L. Mayhew
Sad iron, Self heating....G. H. Waters
Safety brake....J. A. Lyon
Sand cutting and riddling machine....G. F. Bowdle et al..
Sausage linking machine....J. C. Collins
Saw benches, &c., Chain feed mechanism for....H. Atkinson
Saw gage....P. L. Ganyo
Saw set....E. O. Blankenship
Scaffold....W. C. Fritz
Scaffolding support, Combination....T. H. Kingston
Scale, Weighing....O. M. Rice
Scoring machine....J. G. Jones
Screening device....O. R. Smith
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Screw thread cutting devices, Machine for forming....R. P. Wright et al.
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Semaphore blade and holder therefor....G. Petigio
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Sewing machine, Book....L. Egger
Sewing machine, Buttonhole...H. C. Miller
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Sheet feeding mechanism...L. E. Morrison
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Shop management....C. B. Brewer
Show case....M. L. Lobenstein
Show case construction....F. A. Dixon
Shuttle....R. N. Allen
Sign, Changeable....C. P. Flachaire
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Sinker support....E. A. Pomeroy
Skates, Wheel and axle for roller....T. W. Robinson
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Skiving machine....W. J. Young
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Spray nozzle....F. G. Manly
Spring construction....M. McIntosh
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Street cleaner....C. D. Fahrney
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Structural member....J. Kahn
Suction cleaner....F. A. English
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Telephone receiver....J. Halldow
Telephone relay or repeater6C. D. Morris
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Tires, Making vehicle....J. P. Clare
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Track sanding apparatus....F. Rothwell
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Issued July 30, 1912.

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Coke oven door.....W. O. White
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Compnting machine.....A. O. Davison
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Cooker, reinforced heat retaining stone, Fireless.....H. A. McCord
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.....J. J. Power
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Gases and vapors, Apparatus for removing suspended matter from....H. L. Doherty
Gases, Apparatus for removing suspended liquids and solids from....H. L. Doherty
Gasoline engine.....H. Collinet
Gear cutting machine or the like.....
.....W. F. Zimmermann
Gearing (2 pats.).....A. E. Reuss
Gearing, Transmission.....J. Eckard
Gopher trap.....A. F. Renken
Grain mill.....A. Craig
Grease cup, Compression locking.....
.....O. E. Risser et al.
Grinding machine (Reissue)..N. B. Nichols
Grinding machine blade.....J. P. Guppey
Grinding mill.....M. E. Rozelle
Gun recoil mechanism.....K. Voller
Gyroscopic steering gear, Valve control mechanism for.....G. C. Davison
Gyroscopic steering mechanism for torpedoes G. C. Davison
Harp action L. Wolf
Harrow cultivator attachment.....
.....W. L. Kovar et al.
Harrow, Rotary.....F. Hanson
Harvester, Broom corn.....B. Titus
Hat ornament band and hat pin protector, Combined.....C. W. Schleier
Hat pin protector.....R. L. Slonaker
Hat pin shield.....M. Allabough
Head rest.....J. M. Kaplan
Heat transferring apparatus.....
.....E. Lucas-Girardville et al.
Heating apparatus.....G. Machlet, Jr.
Heating device, Electric....C. P. Madsen
Hinge.....J. Soss
Hinge and hanger, Combined.....
.....E. L. Watrous
Hinge, Gravity.....S. Frey
Hinge, Reel.....E. E. Tucholke
Hoisting and conveying apparatus.....
.....C. E. Elm
Horseshoe attachment, Emergency.....
.....T. J. Ragan
Hose band tightener.....H. Gibbs
Hose coupling, Air.....M. Hendricks
Hose nozzle.....H. Gibbs
Hose reel, Automatic.....A. L. Olsson
Hydraulic duplex motor.....O. Angelini
Ice breaker.....J. L. Opp
Identification device.....G. S. Guy
Igniter.....S. Herlinger
Illuminating device.....W. H. Spencer
Illuminating device.....J. A. Carlstedt
Incubator audible signal or annunciator....
.....H. R. Lightcap
Ink, Conductive, (2 pats.)..H. E. Goldberg
Innersole.....F. L. Corson
Insect catching device.....F. C. Young
Insulating device.....J. H. Lendi
Insulating rail joints, Means for (3 pats.)...
.....B. Wolhaupter
Insulating support for storage battery tanks
.....G. H. Morris
Internal combustion engine.....
.....W. J. Robb et al.
Iron or steel articles, Treating.....
.....G. F. Westcott
Ironing board.....H. Mendenhall et al.
Ironing board, Foldable.....I. W. Bowman
Ironing machine.....E. E. Norton et al.
Jacquard mechanism (3 pats.).....
.....J. A. Groebli
Jar molding machine.....W. Lewis
Jewelry fastening means.....W. Leidig
Keys, Bank of.....C. A. Bals
Kinematograph films, Producing.....
.....B. K. and T. Brown
Knife cleaning machine....E. W. Kottusch
Knitting machine, Stocking.....
.....G. E. Cottrell et al.
Knitting machine.....A. M. Pigeon
Lamp, Acetylene gas.....C. W. Beck
Lamp, Arc.....C. Gonzalez-Perez
Lamp bulb cleansing means.....
.....L. H. Bunker et al.
Lamp construction, Arc.....A. A. Low
Lamps, &c., Combination lock for electric.
.....G. I. Silbert
Lamps, Manufacture of tungsten filaments for incandescent electric.....A. Lederer
Latch for sliding doors.....R. P. Hill
Lathe accessory.....W. P. Ruppert
Lathe tool.....F. O. Jaques, Jr.
Leaf turner.....H. Jessen
Lens (2 pats.).....W. Churchill
Lens mount.....C. L. Merry
Lens, Signaling.....W. Churchill
Letter board.....T. W. Suddard
Level with a reflecting system, Spirit....
.....H. Wild
Life saving device.....J. J. Rectenwald
Line, casting machine.....H. Drewell
Loader, Shock.....J. McManus
Locomotive fire box baffle wall (2 pats.)..
.....H. D. Savage
Logging apparatus.....C. W. Russell
Loom attachment.....A. E. Halvorsen
Loom stop motion.....H. J. Miller
Magnesium carbonate, Manufacturing.....
.....F. S. Young
Magnifier, Binocular.....C. J. Troppman
Mail box.....E. L. Carpenter et al.
Mail carrying device.....T. R. Neiswander
Mail delivery apparatus.....A. J. Jones
Manure loader.....J. P. and J. A. Lucas
Manure spreader.....H. F. Snyder
Match box filling machine.....F. Schafer
Measuring and stopping device, Automatic.
.....J. R. T. Wilson
Mechanical movement.....W. A. Barker
Mechanical movement.....C. J. Robertson
Memorandum sheet, Dictation..N. C. Durand
Mercury motor meter.....J. H. Hodde
Metacresol with organic acids, Derivatives of.....N. Sulzberger
Metal strip straightening device.....
.....M. M. Beeman
Metal strip untwisting device.....
.....M. M. Beeman
Metallic tie and rail fastener..D. Phillips
Milk, &c., Apparatus for treating.....
.....H. Feldmeier et al.
Milking machine pulsating mechanism.....
.....D. T. Sharples
Milling machine, Hexagonal.....
.....O. A. Smith
Mine gallery frame.....W. Binder
Miter gage, Adjustable.....J. M. Bley
Molds and cores, Method of and apparatus for making.....J. C. Bannister
Molding and grooving head..W. J. McSorley
Motor.....O. R. Buck
Motor controlling device.....J. T. Janette
Music filing cabinet.....G. C. Geraty
Music rolls, Spool for perforated.....
.....G. H. Davis
Musical instrument automatic modulating mechanism.....P. Welin
Musical instrument bellows....R. A. Gally
Musical instrument control handle.....
.....R. A. Gally
Musical instruments, Tracker for automatic.
.....C. S. Burton
Neckwear, &c., and making the same.....
.....J. H. Bentley
Nitrogenous compounds, Preparing.....
.....L. L. Summers
Nostril expander.....A. C. Knowlson
Nut, Lock.....W. F. Bonness
Nut, Lock.....H. Bartley
Nut, Lock.....E. B. Pack
Nut, Lock.....J. R. Schrader
Nut lock.....G. E. L. Semans
Nut tap.....O. A. Smith
Oil burner.....G. R. Blair
Oiling system, Engine.....C. Reeves
Packing case, Folding.....M. P. Connolly
Paddle mechanism, Vessel.....W. H. Witte
Padlock, Combination.....J. Lorey
Paging and numbering machine.....
.....W. F. Heffner
Pail, Collapsible dinner...T. L. Scott et al.
Paper board cutter.....G. Donat
Paper towel.....F. G. Crane
Patch and swing pocket, Combined.....
.....F. G. Dodshon
Paving brick or block.....J. M. Porter
Peat, Drying raw.....H. Brune et al.
Pharmaceutical products....M. Engelmann
Phonograph clutch actuating device.....
.....C. Lindstrom
Phosphorites, Converting....H. V. Dunham
Piano.....C. C. Chickering
Picket and tent pin.....C. Harrison
Picture films and fire proof receptacle for.
.....C. James
Picture machine, Motion.....
.....W. B. Featherstone
Pin safety catch.....E. Morehouse
Pins with head plates, Providing metallic
.....H. J. Edel
Pineapple peel, Machine for removing the pulp from.....O. H. Rene
Pipe grab.....C. J. and R. C. Curtis
Pipe wrench.....A. Weigand
Pistol, Automatic.....J. H. Wesson
Pitcher, Self.....O. D. Hutts
Pitchfork and rake.....C. D. Ryker
Plant juices, Determining the oxidase content of.....H. H. Bunzel
Planter, Potato.....E. W. Kitchen
Planters, Clutch for corn..L. M. Buchanan
Plow.....C. W. Hicks
Plow (3 pats.).....J. T. Gantt
Plow attachment.....F. C. Solberg
Plow, Engine gang.....W. L. Paul
Pneumatic cleaning apparatus..
.....E. H. Lichtenberg
Pneumatic elevator.....G. and J. Bernert
Pneumatic wheel.....A. H. Smith
Pole, Sectional reinforced concrete.....
.....J. A. Griffin
Post.....D. W. McProud
Potash bulb.....G. P. Vanier
Potash from feldspar, Obtaining.....
.....J. M. Neil
Powder, Blasting.....R. Ponnay
Powder distributer.....C. H. Leggett
Power transmission device.....E. Shepard
Pressures, Equalizing.....H. L. Doherty
Pressures, Means for equalizing.....
.....H. L. Doherty
Primer, Electric.....H. W. Starkweather
Printing machine, Multiple color tube.....
.....G. H. Neidlinger
Printing press.....W. M. Clark
Printing press attachment.....F. Roberts
Printing surfaces, Producing..W. J. Yeoell
Pulley.....R. Reid
Pulque, Elaboration and preparation of...
.....A. J. Carbajal
Pump.....J. L. McElvain
Pump.....E. Gerstenberg
Pump, Air lift.....J. H. Holmgreen et al.
Pump, Centrifugal or turbine.....
.....L. R. Alberger
Rail grinder.....G. E. Pellissier
Rail joint.....J. W. Reynolds
Rail joint.....J. O'Brien
Rail joint, Boltless, (2 pats.).....
.....W. R. Crawford
Railway brake.....W. H. Jones
Railway cross tie, Metal.....G. H. J. Maas
Railway rails, Anticreeper for.....
.....W. R. Thomas
Railway signal.....T. F. Cody
Railway tie.....E. C. Schmadeka
Railway tie, Metallic.....L. J. Findlay
Railway tie, Metallic.....W. C. Spousta
Railway traffic controlling apparatus, System for electrically controlling and operating.....H. B. Taylor
Rat trap, Electric.....A. Kita
Razor stropping and grinding machine...
.....W. J. McCollom
Reamer, Expansion.....D. H. Dugar
Recording and adding machine.....
.....S. B. Austin
Reel.....W. H. Kennedy
Resilient wheel.....M. Wagner
Rock, coal, &c. drill.....S. S. Wyer
Rock drill, Gasoline.....S. S. Wyer
Rolling flanged metal beams or bars.....
.....H. Grey.
Rotary engine.....W. McDonald
Rotary internal combustion engine.....
.....R. S. Dickinson
Rotary motor.....L. W. Bucher
Ruling machine, Paper.....D. Cameron
Sad iron.....C. P. Madsen
Safe, Miniature.....H. Beshore
Salt cake furnace.....J. H. Nield
Sand molds, Method of and apparatus for making.....J. C. Bannister
Satchels, &c., Locking device for.....
.....L. Williams
Saw.....C. H. Douglas
Saw handle.....O. O. Barnes
Saw, Meat.....J. F. Waters
Scale.....F. S. Hebden
Scale.....F. Chatfield
Scoring machine.....J. W. Denmead
Screw clamp, Hand.....H. Geisenhoner
Screw machine tool carrier....O. A. Smith
Seal, Milk can.....E. J. Cowell
Sealing machine, Carton.....R. S. Clarke
Seaming machine, Can head..F. J. Smith
Sewing machine presser foot operating device.....F. A. Drake
Shade bracket, Window.....T. Gross et al.
Shaft, Balanced oscillatable..J. F. Webb, Jr.
Shaft kilns, Operating.....H. L. Doherty
Shaft, Vehicle.....J. B. Finley
Shafting coupling.....W. O. Kennington
Shaper work holder.....H. E. Morton
Shapers, Back rest for draw cut.....
.....H. E. Morton
Sharpening device for meat slicing machine knives, &c.....H. R. Goodfellow
Shearing mechanism, Rotary.....
.....G. W. Swift, Jr.
Sheep dipping mechanism.....R. Clark
Shelf frame.....S. Hauser
Shock absorber.....E. S. Bullard
Shock absorber.....J. T. Mullen et al.
Shock absorber.....P. E. Haugh
Shoe attachment.....E. R. Carey et al
Sifter, Flour.....A. J. Rice
Sign holder.....W. A. Smith
Signal wire support.....J. Carlson
Sink for washing crockery.....F. Staines
Sled runner.....H. J. Miller
Sliding jaw wrench.....S. S. Rogers
Soap holder.....D. Boutell
Socket, Connecting.....U. G. Beatty
Socket wrench.....C. P. Bronson
Sound records, Making.....J. W. Owen
Sound reproducer.....D. Higham
Sound reproducer.....A. N. Pierman
Spade step.....J. A. Belknap
Speedometer, Magnetic.....J. K. Stewart
Spiral indicator.....J. R. S. Blaine
Splitting machine, Brand knife.....
.....C. A. Hirth
Spoke clamp.....J. Blackford
Spoke extractor, Wagon...B. C. Fisk, et al.
Sprayer, Locomotive coal.....W. J. Orr
Spring wheel.....G. L. Webb
Spring wheel.....A. W. Drummond et al.
Stalk cutter.....H. W. Miller
Standard High jump.....W. S. Tothill
Steam boiler.....H. L. Doherty
Steam boiler.....J. Barrow
Steam engine.....F. M. Prescott et al.
Steam generator.....A. A. Cary
Steel stamp shoes, Making manganese.....
.....F. A. Haughton
Stop motion, Twister.....T. H. Smith
Stopper applying machine..H. M. Brown
Storage battery.....T. A. Edison
Storage battery (2 pats.).....E. Sokal
Stove attachment.....A. Brochu
Sugar bin.....C. L. Kinney
Sugar manufacturing apparatus.....
.....M. G. Wild
Superphosphate chambers by means of revolving knives, Apparatus for mechanically emptying.....E. Wenk
Superphosphates, Plant for the mechanical discharge of vessels serving for the treatment of.....E. Wenk
Surfacing machine.....G. Burwell

Swivel joint....F. G. Hayes
Tachometer....W. H. Bristol
Tag holder....J. A. Weitzel
Talking machine....E. R. Johnson
Talking machine needle holder....J. Jetter
Talking machines, Means for automatically arresting (Reissue)...A. E. Spencer et al.
Tanks, &c., Construction of....G. H. and H. L. L. Lloyd
Tanning compound....B. W. Newman
Tap or faucet....T. G. Strater, Jr.
Telegraph, Printing....B. Soldatencow
Telephone attachment....W. A. Schmelz
Telephone exchange system...E. R. Corwin
Telephone receiver....L. W. Carroll
Telephone receiver shell....F. O. Richey
Telephone wall set....R. H. Manson
Telpher cars, Device for lifting and lowering....H. Muller
Textile material, Apparatus for conditioning....I. E. Palmer
Textile material, Conditioning...I. E. Palmer
Thermometer holder....W. S. Atchison
Thread cutting tool....B. Borden
Thread, Manufacturing artificial....J. Hermans
Threshing machine....B. Jacobsen et al
Tiles, Polishing cement...F. R. Thoma et al.
Tin opener....B. Jirotka
Tire making apparatus....C. H. Semple
Tire valve, dust cap, Pneumatic....S. A. Currin
Toilet article....G. E. Williams
Tool holder....J. Carr
Tool rotating mechanism....G. H. Gilman
Toothpick holder and dispenser....J. Sobretto et al
Torpedo diving gear....F. M. Leavitt
Torpedoes, Launching....G. C. Davison
Toy....A. Schultz
Track construction and rail clip (Reissue)....J. Noll
Track switch, Overhead....G. A. Olson
Track tie removing and replacing machine....G. J. Bury
Tractor, Agricultural....A. E. Zock
Trains, Device for rebrassing freight....M. F. Gosswiller
Trolley....M. Jakubowski
Trolley, Overhead....R. A. Peglar
Trolley system, Underground...A. Kautzky
Trousers, &c., fastening device....A. Friedman et al.
Trunk fastener....S. Meledonian
Turbine, Steam....T. Bodde
Twisting machines, &c., Stop motion for....T. J. Kelly
Typesetting and distributing machine....H. C. Gammeter
Typewriter platen actuating mechanism....H. Bates
Typewriting and computing machine, Combined....R. H. Strother
Typewriting machine....G. H. Smith
Typewriting machine card holding attachment....W. Banta
Undergarment....A. F. Browning
Universal joint....H. Cooper
Vacuum cleaner, Hand operated....F. B. Buell
Valve....E. J. McCarty
Valve, Automatic gas shut-off....W. Proffitt et al.
Valve, Gasoline spray or vaporizer....J. T. and G. Metcalfe
Valve gear....U. Ketterer
Valve gear....J. T. Wilson
Valve mechanism, Hoisting engine (2 pats.)....S. T. Nelson
Valve, Thermostatic compound....W. J. Bergens
Vault, Burial....R. O. Armstrong
Vault, Grave....H. A. Myers
Vehicle brake....R. A. Boutwell
Vehicle spring....H. S. Chapin
Vehicle top curtain....W. T. Murray
Vehicle wheel....T. H. Rushton
Vehicle wheel....A. McKellop
Vehicle wheel....C. W. Barrett
Vehicle wheel....M. McIntosh
Vehicles, Automatic starter for motor....M. T. Baird
Vending machine, Coin controlled....K. A. Ohman
Ventilating system....E. M. Surprise
Vessel closure....H. A. Stipens
Wagon box attachment....L. Onsrud
Washing apparatus....G. W. Connor
Washing machine....D. J. Shea
Washing machine, &c., roller attachment....A. Scharnweber
Water closet....E. P. Gaylord
Water heater....H. S. Humphrey
Water lift....B. F. Strange
Water pipe cleaning process....G. W. Redeker
Wave motor....J. Nyswander
Weaner, Calf....C. Johnson
Weight motor....G. Schwartz
Welding, Electric....H. F. Parish
Well drilling rig....T. W. Connolly
Wheel flange lubricator....J. H. Miner
Whiffletree guard....W. L. Misner
Winding mechanism....F. Hayes
Wire bound box....J. Shellenberger
Wire, Covering for....C. Moon
Wire tightener....A. Carriere
Wire working device....S. S. Livezey
Wiring device....A. L. Russell
Wrapping or mailing machine....F. C. Waldron

Issued August 6, 1912.

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Abradant compound....L. C. Jablesnik
Account register....H. C. Guetschoff
Adding machine....J. W. Witsell
Adding subtracting, and multiplying machine....S. B. Austin
Adhesive....C. B. Hunter
Aeroplane....M. H. Webster
Aeroplane....M. J. Zmujdzinowicz
Aeroplane....G. F. Mentz
Aeroplane....P. D. Smith
Aeroplane....H. J. List
Aeroplane....G. Rasmussen
Aeroplane amusement apparatus....E. S. Smith
Aeroplanes on moving warships, Device for facilitating the alighting of....F. Filiasi
Agricultural implement....A. E. Merritt
Agricultural implement....W. H. Rice
Air compressor, Compound....A. England
Alcohol from the waste sulfite cellulose lyes, Producing....P. G. Elkstrom
Alkali hydroxids....A. W. Elkstrom
Ammonium sulfite into ammonium sulfate, Converting....K. Burkheiser
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Anchor....A. Cappricci
Anchor plate....H. O. Pritchard
Animal trap....H. W. Christman
Apparel hanger....G. Fuskerud
Argillaceous articles, Making....R. D. Mershon
Automobile extricator....H. S. McCall
Automobile shield....A. B. Thomas
Baking powder....D. Beatty
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Baths, Production of aerated....A. W. Leuschner
Battery plates, Regenerating storage....M. Deinlein
Bean separator....T. Ruiz
Beer spraying device....M. Adamowski
Bell ringer, Magneto....E. Bowman
Belt support for garments....I. C. Isaacs et al.
Binder gluing device....C. Holly
Binder, Loose leaf....H. Hellweg
Biological preparation for the production of intestinal peristalsis....G. Zuelzer
Blank pressing machine....M. W. O'Brien
Bleaching....E. Steiger
Blend making machine for staple gods....A. I. Gerry
Boat, Unsinkable....G. Pitre
Boiler cleaner container, Metal...F. A. Ives
Bolt anchor device....B. Frank et al.
Bolt and nut....A. Goldsman
Bolt and nut lock....H. L. Huggins
Bolt retainer....N. C. Thalheimer
Bolts, Manufacturing....F. M. Pattersou
Boring bar tool retaining device....H. Mueller et al.
Bosom press....W. Snyder
Bottle guide....E. Baker
Bottle, Non-refillable....F. P. Mitchell
Bottle, Non-refillable....J. Melio
Bottle, Non-refillable....J. Stephen
Bottle, Non-refillable...E. J. Heil et al.
Bottle stopper, Non-refillable...L. B. Zaring
Bottle, support, Nursing....W. Sefts
Bottle washing machine...C. K. Volckening
Bracelet, Expansible....R. Loog
Braiding machine....H. Buscher
Brake....A. P. Brush et al.
Brake of cycles, &c....A. T. Austin
Brick loading apparatus...W. W. Wallace
Bridge, Reinforced arch....J. B. Marsh
Broom band press....J. Jensen
Brush, Bottle....W. P. Braun
Buckle....W. B. Bliss
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Cabinet....G. Maley et al.
Calculating machine....T. I. Potter
Calculating machine with key moving device, Thomas....B. C. M. Behr
Calendar pad holder....P. H. Yawman
Calipers....N. Helwig
Camera film feeding mechanism....A. E. Caldwell
Can filling apparatus....W. J. Phelps
Can tipping machine....G. A. Marsh
Candle holder (2 pats.)....N. Zyliewicz
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Car brake....H. Stillman
Car cushioning device....L. L. Leasure
Car door locking system....H. Gordon
Car fender....D. Ainis
Car lock, Dump....R. E. Cartzdafner
Car, Motor....H. H. Kennedy
Car stake....J. W. Silfberg
Car warning signal, Street....F. A. Pfannenschmidt
Car wheel, Self oiling...J. W. Baker et al.
Cars, Elastic suspension device for motor....F Pagliano
Carbon, Removing....W. W. Johnston
Card, Coin holding....F. K. Arnold
Carding machinery comb mechanism....G. F. Geb
Cash register....W. M. McCarthy
Cash register, Change making....E. J. Von Pein
Casting plants, eMtal pouring apparatus for....J. W Brown, Jr.
Cellulose esters....W. H. Walker
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Chart for determining the flux of light....A. A. Wohlauer
Chenille fabric....C. B. Young
Cherry seeder....C. S. Hendrick
Chimney cap and ventilator....O. B. Madison
Chiropractor's adjusting table....J. H. Scheuck
Chuck, Automatic....P. Catucci
Cigar lighter....J. L. Herzog
Circuit closing device....A. D. Rizer
Clinker cooler....R. R. Bear
Clock geographical index....J. B. Olinger
Clock, Keyless automobile...J. R. Putnam
Clutch....J. J. Rufe
Clutch....K. Crittenden
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Clutch mechanism....J. P. Cleal, et al.
Coating objects with subdivided material....F. F. Bradley
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Coffee and tea pot....V. Paone
Coffee grinder....W. A. McGuire
Coke oven of the regenerative type, Horizontal....E. Hofmann
Coin controlled lock and conveyer....W. S. Farnsworth
Collapsible box....J. H. Stanton
Composition of matter....R. M. Cobban
Computing machine....T. I. Potter
Concave....P. W. Larson
Concrete arch reinforcement....C. A. P Turner
Concrete block machine....M. Wohl
Concrete floor decking...R. B. Higgins et al.
Condenser lap machine (3 pats.)....H. C. Perham
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Condnit fitting, Electric...C. H. Bissell et al
Conveyer....G. D. Parker
Conveyer....C. D. Seeberger
Conveyer, Pneumatic....E. F. and T. F. Bickenkamp
Cooking utensil....A. B. Arctander
Cooking utensil....L. S. Lachman
Corn hanger, Seed....G. A. Lang
Corn husker....W. H. and W. H. Allen
Corn sheller....C. Machacek, Jr.
Covering, Acid, alkali, and water resisting....G. D. Crabbs
Crate, Collapsible....G. W. Crayeraft
Cross slide operating means, Automatic....J. C. Potter
Cue tip chalking device....A. A. Chisholm et al.
Cultivator....J. Kindle
Cultivator....W. L. Paul
Cultivator tooth and connection....D. W. Martin
Curb shaping tool....E. Olson
Current motor....T H. Walker
Current motor, Multiple....W. T. Bridges
Curtain bracket....E J. Childress
Curtain ring....C. F. Lann
Curtain rod, &c....J. J. Clemens
Curtain rod heads, Machine for forming corrugated....C. P. Henry et al.
Cushion beating machine....C. R. Vinquist
Cutter setting device....W. H. Oehler
Cutting holes in sheet metal, Device for....E. L. Schanck
Cyanid plant....A. F. Tanner
Damper....D. W. Powers
Dental vulcanizer....G. L. Bruce
Diacetyl-paramido-phenol, Manufacturing....F. E. Stockelbach
Dish drainer....W. E. Hayward
Dish washer....C. L. Beach
Display device....J. Crowther
Display rack....O. N. Hegge
Display stand....F. E. Peterson
Door and show case, Combined....A. L. Johnson
Door frame....A. J. Ellis
Door hanger....C. T. Westlu et al.
Door hanger track....P. Frantz
Door lock, Sliding....H. L. Ewing
Door locking apparatus, Jail....F. Adam
Door wall bed, Reversing....L. E. Frye
Dough raising apparatus....J. F. Berthelot
Dredger for pulverulent material....C. W. Ebeling
Dredging machine....I. Peterson
Drilling bolts, &c., Machine for....E. W. Fishburne
Dry separator and amalgamator....J. B. Hartman et al.
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Dye, Vat....H. Friedmann
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Dyeing machine, Pressure....F. J. Muir
Dynamo machines and electric circuits, Regulator for....R. M. Newbold
Edge setting machine...E. E. Winkley et al
Egg beater....S. A. Grant
Elastic material....W. J. Tuefel
Electric conduit fitting....B. M. Graybill
Electric distribution system....V. G. Apple
Electric furnace....C. A. Weeks
Electric globe packing and testing means, Incandescent....A. A. Brown
Electric heater....F. C. Perkins et al.
Electric light cord adjuster....T. Smith
Electric machine cooling means, Dynamo....W. A. Dick
Electric motor....E. M. Barnes
Electric switch....P. Druseidt
Electrical apparatus...A. B. Reynders et al.
Electrical apparatus hanger....A. Scheible
Electrical conductors, Fault location on....H. M. Friendly
Electrical distribution system....W. A. Turbayne
Electrode, Flaming arc....E. J. Guay
Electrolytic cell....A. Tommasini
Electrotype plates, Manufacture of....C. P. Cottrell
Electrotype shells, Machine for backing up....C. P. Cottrell
Elevated carrier....C. S. Sack
Elevator controlling apparatus, Electric....W. D. Lutz
Elevator lock....C. H. A. Bahde
Elevator safeties, Spring motor mechanism and attachment for operating....A. Magnuson
Embroidering machine driving and stop mechanism....G. L. Bourquin et al.
Engine....J. H. Pierce
Engine sparking mechanism, Internal combustion....L. T. Rhoades
Engine starting crank, Hydrocarbon....A. M. Walstrom
Engine starting device, Explosive....W. J. Foster
Engine starting device, Internal combustion....C. G. Adsit
Engine steering device, Traction....C. S. Whitworth
Engine starter, Automobile....G. H. Kelley
Engine water cooling system, Hydrocarbon....J. W. Packard
Envelops or bags, Manufacturing....A. Wasmus
Eraser for blackboards, &c....E. M. Hausbrouck
Evaporating apparatus for recovering soda-ash....G. H. Marshall
Eyeglass nose guard or clip....W. Dengler
Eyeglass temple attachment...W. S. Searles
Fare indicator, Railway or other....O. Oehring
Feeding mechanism, Material....H. Zimmerman
Fence, Portable....C. B. Johnson
Fence post brace....M. Logan
Fence post, Double....D. C. Crocker
Fence supporting truss, Wire....J. C. Calhoun
Ferrule, Metal....W. W. Turner
Fibers, Retting vegetable....L. Peufallit
Fifth wheel....G. W. and J. Fieldes
Filaments, Producing metal...W. C. Arsem
Film carrier....E. Brinkmann
Film or film-like material, Supporting frame or rack for....K. Kresen
Fire door....H. C. Waldman
Firearm, Automatic....W. H. Whittier
Fireproof door or shutter...E. H. McCloud
Fish dressing machine....E. A. Smith
Fish hooks, Machine for attaching gut to....W. Borchardt
Flame spreader....J. H. Winde-Muller
Floor mat....O. Winter
Fluid clutch....A. H. Shoemaker
Flushing device, Water closet....P. Haas
Flying machine (2 pats.)....T. A. Dring
Flying machine....J. Brown
Flying machine....R. L. Bernard
Folding chair....F. Simmons
Folding cup, Sanitary....J. Y. Shaw
Folding table....J. Defatsch
Frame....N. L. Jacobus
Fruit Picker....S. S. Eccleston
Fumigating, deodorizing and disinfecting sewers, &c., Apparatus for....C. E. Beeman
Fumigator....F. C. Foster
Fur resembling materials, Machine for producing....G. Riedel
Furnace....R. Okrassa
Furnace hearth, Pair heating....T. V. Allis
Furnaces, Cleaning device for water-cooled wall....G. J. Rennie
Game apparatus....R. W. Mansfield
Game apparatus....P. Kruger
Game apparatus....W. L. Meredith
Gas burner, Safety....A. W. Bowden
Gas burner valve....F. E. Yates
Gas engine....C. White
Gas engine....B. M. Aslakson
Gas generator....A. E. Freeman
Gas producer....R. Daae
Gas, Purifying sulfurous-acid....J. Blanc
Gas washer....M. W. Johnson, Jr.
Gear, Change-speed....C. J. Paulson
Gearing, Change speed....H. A. Ryther
Gearing, Power transmission....L. J. Campbell
Gearing, Variable speed....G. H. Boncher
Glass drawing apparatus, Ring shield and fender ring for....M. J. Healy
Glass drawing apparatus, Ring-shield for... (2 pats.)....M. J. Healy
Glass drawing tank attachment....M. J. Healy
Glass machine....J. Diffenbacher
Glass tank....M. J. Owens
Golf ball mold....E. W. Buckau
Goods rolling machines, Tape guiding means for....A. J. Bohnengel
Grain conditioning machine...J. M. Sinnett
Gravers, Holder for sharpening....O. W. Dreyer
Grinding machine, (2 pats.)...H. B. Nichols
Ground rod....C. Lanz
Growth destroyer....H. C. Shubert et al.
Gun sight....E. J. D. Newitt
Hair comb....G. Anderson
Hammer throttle gear, Steam....W. J. Hagman
Hand or breast drill, Portable....R. P. Thompson
Harrow (2 pats.)....E. E. Adix
Harrow and leveler, Combined....J. H. B. Hosemann
Harrow for meadows...A. Grunenwald et al
Harvesting machine....G. W. Patterson
Hat fastener....H. J. Yorty
Hat pin guard and point protector....E. C. Meckfessel et al.
Headlight....F. Buchanan
Headlight....W. Churchill
Heat indicating device....W. B. Hughes
Heel seat rounding machine....J. V. Allen
Heel, shoe....C. W. Lakin
Hide treating machine....C. J. Glasel
Hinge....J. A. Stuart
Hinge....A. Prentice
Hinge and fastener, Shutter....L. F. Brown et al.
Hinge gage....R. J. Sizer
Hoe....A. Redding
Hoist....E. Y. Moore
Hoister bucket dumping appliance....A. Lambert
Hollow body shaping apparatus....G. W. Beadle
Honing or sharpening machine, Blade....H. Christiansen
Hook for hanging pictures, &c....M. Dehn
Horn, Signal (2 pats.)....I. E. Stump
Horse detacher....W. F. Bengs
Horse ice boot....E. W. Hunter
Horses, Overcheck breaking-bit for kicking....D. H. Hogan
Horseshoe....E. C. Sheuffel
Horseshoe....C. Rose
Horseshoe attachment....S. Noro
Hose and tire connector, Automatic....E. J. Rohrbacher
Hydrogen, Purifying....G. H. Rabenalt

Ice cream freezer.....H. Jurgens
Ice creeper.....M. B. Quackenbush
Ice creeper.....M. Gibson
Igniter, Electric.....J. G. Cook
Igniting device, Electrically controlled.....W. Bale
Ignition device, Electrical..H. J. Podlesak
Index frame, Hinged.....J. H. Rand
Induction coil.....J. F. Cavanagh
Ink well support.....J. J. Verwys et al.
Innersole, Shoe cushion....F. O. Brown
Insect destroyer.....C. V. Hoselton
Insulator for overhead structures, Sectiou.....F. S. Denneen et al.
Joint.....T. F. Payne
Joint for rolled metal bars..E. W. Goodey
Kaleidoscope.....W. N. McComb
Knitted webs, Improving the texture of..J. D. Morley
Knitted webs, Machine for running on....W. D. Butz
Knitting machine.....R. W. Scott
Knitting machine, Circular...E. H. Walker
Labeling machine.....L. C. Palmer
Lamp.....F. H. Tobias
Lamp.....V. G. Apple
Lamp, Arc.....K. von Dreger
Lamp chimney holding device.....W. M. Burkhard
Lamp globe, Arc.....J. T. Beechlyn
Lamp, Incandescent.....M. M. Merritt
Lamp, Instrument.....J. F. Stender
Lamp or lantern glass holder, Signal.....C. J. Peterson et al.
Lamp, Table.....G. Beuze
Lamp, Vacuum tube.....D. M. Moore
Lamp, Vapor.....L. H. Burchett
Lamps, Means for constructing incandescent.....A. S. Knight
Land reclaiming apparatus....J. Baldwin
Lasting machine.....G. Bergmau
Latch, Door.....H. Brandley
Latitude instrument.....M. Cheifetz
Laundry drier.....G. W. Froelich
Legging.....I. Piles
Lightning arrester.....F. S. Chapman
Lightning arrester....E. E. F. Creighton
Line holder.....G. M. Vroome
Liquid fuel burner.....W. J. Cameron
Liquid separator.....E. A. Bidwell
Logging and lumber cars and sleds, Bunk mechanism for.....J. O'Day et al.
Loom.....W. J. Lutton
Loom.....H. Cote
Loom filling thread cutting mechanism, Weft replenishing.....E. P. Ryon
Loom picker mechanism.....J. F. Dustin
Looms, &c., Wage registering apparatus for power.....S. Marschik
Lubricator.....M. Glass
Lubricator.....G. H. Gilman
Lumber gage.....A. B. Welsh
Mail bag deliverer and receiver.....D. W. Millaps
Mail exchange system.....E. C. Rankiu
Malt turning implement.....M. Weisenfeld
Mask used in applying anesthetics.....C. Ogilvy
Match scratching device for pipes.....G. Jaeger
Mattress.....O. R. Hunt
Mausoleum.....G. C. Hunter
Measuring device.....M. Clark
Measuring instrument, Electrical.....J. L. Zander
Metal from metal coated bodies, Apparatus for removing superfluous.....G. Buchert
Metal from sand, Apparatus for separatiug magnetic.....J. W. Brown, Jr.
Metal tie.....J. D. Ellis
Metal working machine.....M. Kennedy
Metals and allows, Producing refined (2 pats.).....A. E. Greene
Metals and alloys, Refining...A. E. Greene
Metals and ores, Extracting and refiuing..A. E. Greene
Metallic tube.....A. C. Mills
Milking machine.....J. Huggler
Mine door.....Z. N. Cox
Miter clamp.....T. B. Miller
Moistener and scaler, Envelop.....D. G. Saunders, Jr.
Music lead holder and turner.....H. R. Kimbler
Musical instrument.....L. H. Maier
Musical instrument note sheet.....J. H. Chase
Negative pole plate.....G. M. Howard
Nostril distending apparatus..A. A. Barratt
Nut lock.....A. D. Darling
Oar.....E. E. Johnson
Oar, Bowfacing.....D. Duhl
Oil burner, Fuel.....C. E. Brown
Oil burning apparatus.....E. Deruntz
Oiler, Floor.....A. J. Axsiom
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Ore crusher.....M. F. Williams
Oven.....C. Ogburn
Overflow alarm.....A. G. Weier
Packing for piston and like rods, Metallic..R. Copeland
Packing, Metallic.....J. V. Clark
Packing ring.....E. B. Campbell
Packing, Rod.....E. D. Bangs
Padlock.....J. A. Giese
Paint and varnish remover.....J Nicles
Painting machine, Pneumatic power.....F. Dykes et al.
Paper tube forming machine..P. G. Kaiser
Paring knife.....O. Wallman
Pasting machine.....A. E. Neilsen
Pastry making machine (Reissue).....E. H. Lanier et al.
Pavements, Reinforcing and protecting device for street.....W. M. Pindell
Pawl carrier.....T. Diseh
Pen, Fountain.....J. E. Swarthout
Photographic apparatus, Film pack.....C. Bornmann
Photographic enlarging apparatus.....E. Broom
Photographic printing device.....H. M. Essington
Photographic printing machine.....C. J. Everett et al.
Piano bench.....M. Hathaway
Pie crust molding and rolling device.....S. E. Winder
Pipe coupling.....J. Gapp
Pipe coupling.....F. W. Bradley
Pipe coupling.....H. C. Werner
Pipe fittings, Apparatus for attaching collars or flanges to.....P. Mueller et al.
Pipe flange.....P. Mueller
Pipe prover, Hydraulic.....E. Crisandt
Pitman cuff.....N. H. Williamson
Planter attachment.....D. J. Mahoney
Plaster board.....C. W. Utzman
Plate lifter.....J. E. High
Playing apparatus, Automatic.....J. Schwertner
Pliers, Band forming.....F. F. Douds
Plow attachment.....T. T. Wells
Plow, Wheeled gang.....N. Weiler
Plug connector.....W. R. Greenway
Pneumatic cleaner.....C. E. Duryea
Poke, Cattle.....J. Mohrherr
Pool ball rack.....D. Girson
Pretzel iron.....A. C. Burky
Printing and composition unit.....A. L. Saltzman
Printing and numbering machine.....F. Meisel
Printing drum.....G. F. Hutchins
Printing mechanism for vending machines.....R. E. Craig et al.
Printing plate, &c., registering device.....J. J. Franeesehini
Printing plates, Preparation of.....M. Ullmaun
Printing press automatic trip mechanism..A. J. Ford
Printing press feeding attachment.....W. S. Brown
Projecting apparatus.....A. G. Previn
Propeller and means of producing the same, Helicoidal.....F. Favata
Propeller, Screw.....J. W. Gunther
Propelling mechanism, Boat.....J. G. Ducassou
Pulley.....A. W. Nelsou
Pump, Air.....P. A. Fisker
Pump, Centrifugal.....J. Hurst
Pump governor, Steam.....W. V. Turner
Pump, Sand.....S. Morimura
Pump stuffing box, Well..D. Daniels et al.
Pump, Valveless.....G. J. Dourte
Pumping engine plant.....C. T. Myers
Punching and shearing machine (2 pats.).....H. B. Kraut
Punching machine.....H. B. Kraut
Racket strengthening device.....F. L. Slazenger
Radiotelegraphy, Mast for.....F. G. F. Brackerbohm
Rail.....A. O'Sullivan
Rail chair.....W. C. Knighton
Rail fastener.....A. R. Gonzalez
Rail, T.....G. W. Dress et al.
Railway gate.....W. A. Fleming et al.
Railway, Monorail.....M. Scheftel
Railway tie.....O. N. Kelly
Railway tie and fastener.....J. T. Clark
Railway tie and fastener....F. J. Peterson
Railway tie, Combination..J. M. Romberger
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Rake frame, Hay....W. M. Bering et al.
Rake unloading attachment, Sweep.....J. H. Cope
Rat exterminator, Electric.....J. W. M. Carmichael
Razor guard.....C. S. Tate
Recording machine.....W. H. Buudy
Refrigerating apparatus.....H. H. Southworth et al.
Refrigerator.....C. R. Rogers
Refrigerator trap.....J. Podolsky
Refrigerators, &c., Sanitary lining for.....A. E. Grochau
Rein holder.....C. T. Owens
Reins, leashes, &c., Device for holding.....H. Franzky et al.
Resilient wheel.....Z. D. Butts
Rim structure.....N. McQueen
Riveting machine.....C. W. Meadoweroft
Rock crushers, Adjustable crusher head for.....E. L. Pemberton
Rock drill and reamer, Combination.....K. Jonassen
Rock drill front cover.....B. Cock
Roll surface cleansing device.....J. A. Frossard
Rotary engine.....J. L. Schmehl et al.
Rotary engine.....W. C. Bosley
Rotary gasoline engine.....H. Hendricks
Sand drier.....T. N. Smith
Sash and weather guard therefor, Window. (2 pats.).....A. H. Newpher
Sash antirattling device, Window.....N. Harris
Saw set.....F. A. Drager
Scale rack.....G. W. Johnson
Scissors, Buttonhole....J. J. Alvord et al.
Scoop, Self weighing.....J. W. Monmonier et al.
Separating and collecting particles of one substance suspended in another substance, Apparatus for.....A. C. Wright
Sewing machine attachment...H. L. Lamb
Sewing machine cover plate.....R. G. Woodward
Sewing machine gage mechanism, Shoe.....E. E. Orr
Sewing machine, Straw hat.....W. Jasper
Sewing machine thread guide..R. J. Plaatje
Shade and curtain bracket, Adjustable window.....J. A. Fisher
Shade roller lock.....A. Husson
Shaft, Vehicle.....J. E. Fuqua
Shafts, &c., Flexible connection for.....L. D. Hubbell
Sharpener, Knife.....W. A. Hayes
Sharpener, Razor.....F. H. Hammond
Sharpening device.....E. F. Altman
Shearing machine, Hand.....H. B. Kraut
Shearing or punching machine..H. B. Kraut
Shell, Shotgun (2 pats).....W. P. Brown
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Shipping case.....J. A. Connolly
Shirt.....H. Saltzman
Ship's gun passes through a predetermined elevation, Apparatus for determining the moment when a.....L. J. Mautner
Shock absorber.....G. C. Martin
Shoe cleat, Base ball.....T. F. McCarthy
Shoe or boot.....F. Tilt et al.
Sifting device, Ash.....M. Nowak
Sight, Battle.....E. J. D. Newhitt
Sign.....E. M. Hanley
Signaling apparatus, Fog..S. A. Pendersen
Signals, System for electrically transmiting.....E. Hermsdorf
Siphon filler.....D. Landau
Skate, Roller.....K. Kohler et al.
Skate, Roller.....C. D. Rice
Skirt rack.....J. A. Douglass
Sleigh.....J. G. Stoeu
Smoking pipe.....J. F. Leeper
Snap hoop.....J. H. Baker
Soil pipe.....S. V. Laughinghouse
Soldering iron heater.....F. H. Denieke
Sole for shoes, Renewable.....L. A. Bilger
Spectacular display apparatus.....D. G. Kindleberger
Speed indicator.....V. L. Cross
Spinning ring holder, Rotary.....B. Hall
Spout bracket and hanger, Down.....L. P. Hazen
Spring lock.....P. F. Augenbraun
Spring wheel.....W. L. Fulton, Jr.
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Square, Flooring.....M. Nelson
Stall and manger.....H. L. Ferris
Stamp canceling device.....C. H. Samberg
Stamp holder, Hand.....L. H. Moise
Stamping plant, Pneumatic.....H. C. Behr
Staple.....A. I. Muntz
Steam generator for liquid burners.....D. Brian
Steel, Case hardening.....K. Blake
Steel, Manufacturing.....H. D. Hibbard
Steel, Producing alloy.....A. E. Greene
Steneil cutting machine, Electric.....E. A. Ivatts
Stencil strip.....S. Elliott
Stove.....C. H. Wurst
Stove, Disk.....C. P. Madsen
Stoves, Device for fuel saving..C. W. Hugy
Strangler.....A. J. Stoll
String holder.....A. Walker
Stump puller.....W. H. Parker
Superheater.....S. M. Vauclain
Suspension system.....P. Pforr
Switch point throwing mechanism.....E. F. Wiederholdt
Switch stand.....F. C. Andersou
Switchback, Automatic....L. E. Holeombe
Swivel hook.....M. J. Dunn
Syringe, Vaginal.....F. B. Mulgrew
Syrup pan.....G. W. Baker
Table signaling device.....H. Bubeek
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Talking machine.....C. Vogt
Talking machine records, Producing.....J. P. Snare
Telephone call recorder.....F. A. Lathrop
Telephone system.....H. P. Clausen
Telescope, Lookout.....A. Konig
Thermometer.....C. S. Ruekstuhl
Thermostat.....T. Chapman
Thread cutter.....M. C. Heckaman
Threshing machine self feeder.....E. P. Charland
Tie and rail fastener.....V. J. Kuna
Timber, Artificial.....S. Bitterman
Timber by phenolate solutions, Preserving..F. Seidenschnur
Tin plate scouring machine.....H. Petin
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Tire.....H. A. Brandenburger
Tire, Automobile wheel.....H. Knoch
Tire for vehicle wheels, Resilient.....W. W. Broga
Tire for vehicle wheels, Resilient metal..F. W. Wieber
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Tire sanding machine.....G. G. Bertram
Tire, Spring.....C. P. Rosier
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Tires, Supporting and retaining device for spare (Reissue).....W. A. Allen
Toilet case.....T. J. Bossert
Tool handle attaching device..F. H. Fuleher
Tool shank.....H. Mueller
Torpedo nets, Device for destroying.....W. Golsteyn
Toy.....F. B. Corrao
Toy aeroplane.....G. M. Kaiser et al.
Toy figures, Means for producing a walking movement in.....H. Muller
Track drill.....A. R. Paulus
Traction machine....S. A. and L. C. Grant
Traction wheel.....J. Beard
Transformer.....O. Schaumberg
Transformer.....C. Aalborg et al.
Trolley road automatic switch.....O. E. Edwards, Jr.
Truck.....W. Westman
Truck, Binder.....H. J. Drager
Truck, Car.....F. A. Krause
Truck side frame, Railway..A. C. Murphy
Trunk, Automobile.....J. M. Pritchett
Truss.....E. Hartwig
Tube forming machine.....J. D. Beebe
Tubing machine.....H. B. Cooley
Tufting machine.....W. E. Buser
Turbine.....V. Gelpke
Turpentine, &c., from wood, Apparatus for extracting (Reissue).....M. McKenzie
Typewriter paper feeding mechanism.....G. W. Davis
Typewriting machine.....C. B. Yaw
Umbrella.....A. Doruseak
Umbrella, Folding.....J. A. Thomas
Universal joint.....K. F. Ranger
Valve.....R. T. Crane
Valve, Converter.....P. E. Gannon
Valve, Explosion engine rotary.....H. E. Coffin et al.
Valve, Flushing.....T. F. Payne
Valve for internal combustion engine (2 pats.).....W. Henry
Valve gear.....A. J. Rowledge
Valve lock.....L. C. Hunter
Valve operating device.....G. B. Porsch
Valve, Siphon.....E. P. Allen
Valve springs, Device for removing.....G. F. Clark
Vamp cutter.....F. R. Fuller
Vehicle attachment.....C. T. Friedrich
Vehicle hood (2 pats.).....T. Golde
Vehicle hood, Hinged (5 pats.)...T. Golde
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Vehicle runner, Child's.....A. D. and W. H. Westman et al.
Vehicle spring.....C. H. Wileken
Vehicle top, Folding.....T. Golde
Vehicle top raiser.....G. W. Christopher
Vehicle wheel.....P. I. Viel
Vehicle wheel.....T. A. Hargraves et al.
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Vending apparatus.....C. Hanel
Vessels, Safety weight for submarine.....M. A. Laubeuf
Vise, Bench.....A. L. Bemis
Wagon box.....S. A. Covell
Wagon, Dumping.....H. S. Palm
Wagon gate.....W. Hopper
Wagon gear.....J. L. Hecht
Wagon running gear.....F. Strecker
Wall.....F. M. Emerson
Wall erecting apparatus.....H. Daw
Warping machines, &c., Combined yarn guiding, clearing, and tension device for.....L. Fessmann et al.
Washing machine.....H. L. Braly
Washstick.....H. M. Pfenning
Water elevator.....J. and W. S. Seaman
Water heater, Electric.....H. P. Ball
Water heater, Solar...J. M. Kennedy et al.
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Water sprinkler or sprayer, Adjustable...E. G. Godfree et al.
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Wave motor.....L. L. Read et al.
Weather strip.....C. E. Aldred
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Well apparatus, Oil.....C. W. Davisson
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Wheel.....T. G. Briggs
Wheel attachment.....H. Booker
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Winding indicator.....P. Ravigneaux
Window screen.....J. W. Toohey
Windows, &c., suspending device for storm.....J. M. Hjermstad
Wire rope block.....W. L. Fulton et al.
Wire stretcher.....W. O. Hutchins
Wire stretcher.....P. McMillan
Wire stretcher and hoisting device, Combined.....J. B. Smith
Wrench.....W. A. Lee

Issued August 13, 1912.

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Adapter.....T. Deaderick
Adding counter.....W. F. Mullaney
Adding machine, Pocket....P. E. Saehrendt
Advertising device.....C. F. Chouffet
Advertising device.....J. Gerhardt
Advertising machine.....C. H. King, Jr.
Aerial vehicles during a flight, Refilling...H. Erdmann
Aeroplane.....D. G. Terzian
Aeroplane.....C. A. B. P. Hawkins et al.
Aeroplane.....G. H. Kellogg
Air brake valve handle, Railway car.....F. R. L. Stott et al.
Air compressor.....C. P. Augustine
Air compressor.....M. Mintz
Air drying apparatus for metallurgical purposes.....B. Walter
Air testing apparatus.....W. H. Flood
Air washer.....M. S. King
Airship balancing device.....G. H. Kellogg
Airship propelling device.....A. Schaeffer
Alarm.....G. Yoch
Alarm or acoustic apparatus (2 pats.).....E. Rubes
Alarm sounding device.....R. A. Gasch
Alumina and potash from feldspar, Extracting compounds of.....S. Peacock
Aluminum, carbon, and nitrogen, Producing of.....S. Peacock
Amalgamator.....C. F. Cropsey
Ammonium chlorid, Making pure.....F. A. Freeth et al.
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Anchor bolt.....S. Wheeler, Jr.
Armor plate.....L. Gathmann
Athletic device.....E. M. Smith
Atomizer.....H. Strumpf
Auger, Earth.....D. Wilson
Automobile.....A. Montel
Automobile buffer.....F. C. Fehrman
Automobile bumper.....F. Lederer
Automobile speedometer drive.....E. R. Draver
Automobile wheel.....L. J. Graham
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Bails, Securing sockets to..C. G. Swenson
Baler, Hay.....G. Heidgerken
Baling press.....H. M. Tallman
Bandage, Hernial.....E. Abadie-Leotard
Bath cabinet.....B. D. Knickerbocker
Battery binding post attaching means, Dry.....W. A. Scott
Battery element.....E. G. Dodge
Battery plate.....E. G. Dodge
Battery plates, Making.....E. G. Dodge
Beam, Jack.....F. E. Terrill
Bearing, Ball.....E. Oldfield
Bearing, Propeller shaft.....E. Y. Leland
Bed, Extensible.....H. Mintz

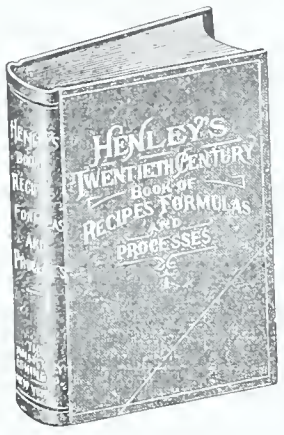
Bed and spring, Extension.....G. and C. Ballard
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Belt.....V. H. Jennings
Belt slackening and tightening device.....P. J. Dreher
Bilge water ejector.....J. Klett
Binding device, Temporary..E. C. Bigelow
Blower or pump.....A. W. Pearsall
Board machine, Cellular.....T. H. Taylor
Boat launching apparatus, Life.....E. G. Perrot
Boats, Hydraulic transmission for.....P. G. Marx et al
Boilers, Apparatus for purifying water for use in steam.....C. W. Rice
Book holder.....A. E. Wood
Book rest and receptacle, Combined.....H. H. Edwards
Book trimming machine adjustable block.....O. G. Klugel
Booth.....C. J. Burton
Bottle detachable stopper retainer.....J. Merrill
Bottle or receptacle.....O. Boehm
Bottle washing and rinsing machine.....O. Eick
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Box covering machine.....J. G. Jones
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VOL. XXIV. NO. 11. } WASHINGTON, D. C.—NOVEMBER 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

A MOTOR BOAT AND AEROPLANE COMBINED.

By FRANK C. PERKINS.

IT is maintained that the flying motor boat shown in the accompanying illustration will change, to a marked degree, transportation over the water. This craft has been thoroughly tried and has shown remarkable speed and stability. It is called "The Flying Fish."

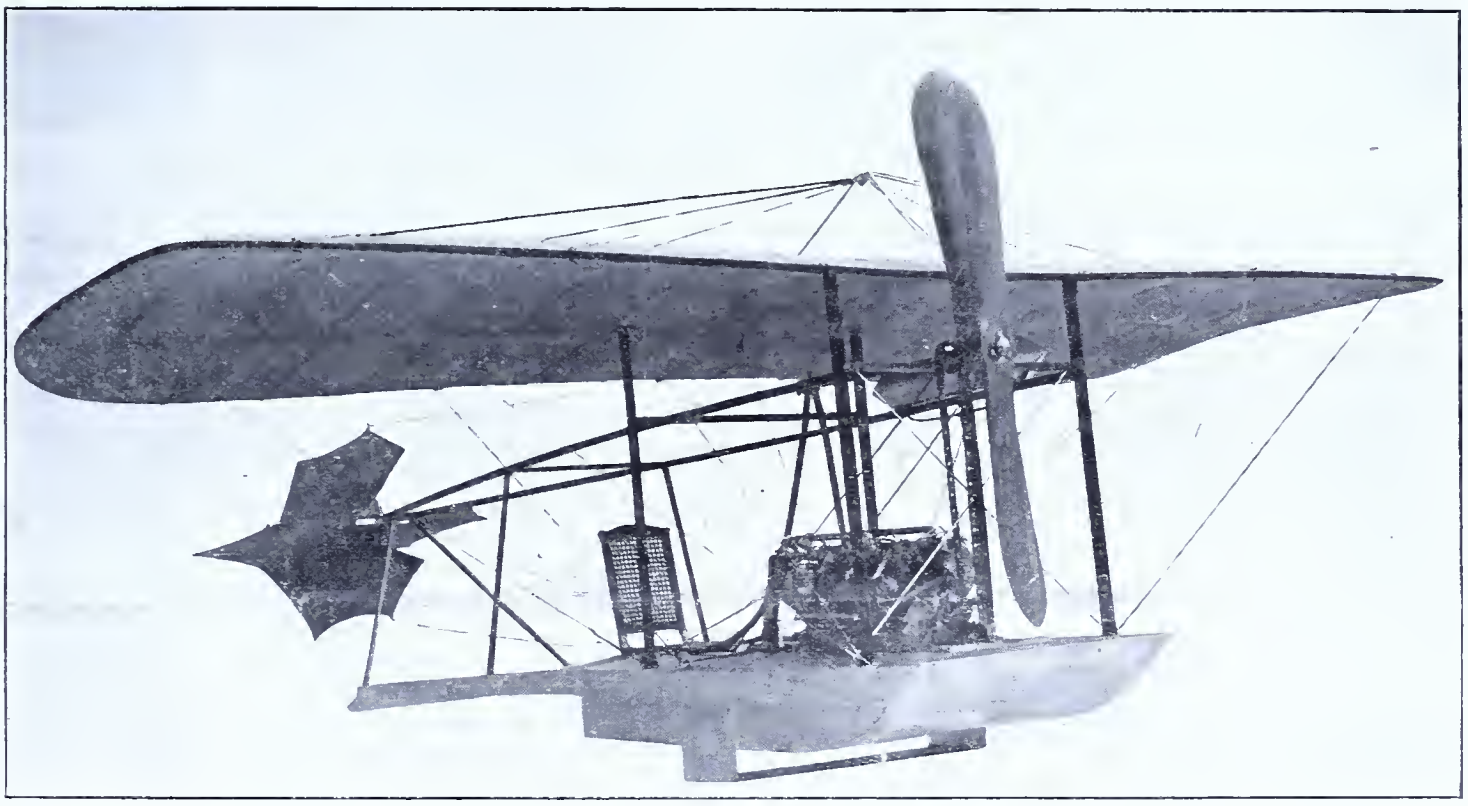
It is interesting to note that A. A. Schantz, President of the Detroit Cleveland Aerial Navigation Company, has arranged for six of these equipments to be used in daily service between Detroit, Cleveland and Buffalo. This combined air and water craft is built along the lines of a giant bird. The construction is a combination of the monoplane and hydroplane and is designed to skim along the surface of the water on its tail feathers, so to speak, at a speed of from 65 to 70 miles per hour.

The first working model was taken out on the Detroit river and skimmed over the ice, scarcely touching it, at an approximate speed of 60 miles per hour. It may be stated that the hull of "The Flying Fish" is a water tight aluminum tank 5 feet 7 inches wide, 7 feet 2 inches long and 2 feet deep. The how end is curved but all other angles are 90 degrees. In the front of the hull is set an 8-cylinder aeroplane motor. This outfit has no water propeller but is operated by a large two-bladed air propeller, measuring more than 6 feet from tip to tip. This wheel is turned at a terrific speed hy the 8-cylinder motor. In the photograph it will be seen that above the hull is arranged the single plane, measuring 26 feet long and 6½ feet wide. The frame is covered with oil soaked khaki. The shape is convex. Extending about ten feet behind the hull, for all the world like the handles of a baby buggy, except that the arms are steel and the wooden cross-piece a foot wide and half an inch thick, is a tail piece on which the craft rests when under way. That is, when the boat attains sufficient speed forward the plane lifts the hull out of the water entirely. Then, the "Flying Fish" leaps over the surface in bounds, with the tail piece touching the water at intervals and steadying the flight. It is maintained that the boat is not expected to fly at any great distance or at any great height. The rush of air catches the plane and lifts her 8 or 10 feet at times. The tail piece, however, is always in the water, controlling her equilihrum perfectly. Extending from the stern of the hull is the rudder. The rudder is a regular aeroplane rudder, but smaller, and is four-vaned, the blades being covered with canvas. The cockpit is in the stern of the hull. The levers for controlling the rudder and plane are all under one man control, and the craft complete weighs 750 pounds.

It is believed that the possihilities of this invention are wonderful, both from a business and pleasure standpoint, as the "Flying Fish" will float perfectly on the water and there is less danger of tipping than in any other boat, for the plane will act to prevent it. In this boat the passengers will have all the sensations of flying, hut there will be something more suhstantial than air to fall on, should anything go wrong.

The first model made was a small one but a larger craft has been designed, as noted in the picture, in which four or five passengers can be carried. The company is to have five or six aeroplanes or airships in operative connection with lake hoats.

In this new development of the aeroplane, there is represented another step toward the formulation of certain fixed principles that will prohahly govern future constructions of vehicles of the air. Just as there has been an evolution of the railway and the automobile, so practical ideas of necessary forms of flying machines are being produced from freakish inventions that were inevitably doomed to failure. The fundamental conception of the foremost engineers of the day is that the aeroplane must be bird-like. Every new discovery in the science of aerodynamics leads to this result. The airship must be a gigantic hird, differing from its natural prototype in such details as will be reasonably involved in the increase of size, and in the substitution of a limited and simplified control for the complex coordinations between brain and structure in the natural device. The efficient aeroplanes of today are blunt hodied and thick-winged. They have controls which are directional rather than stabilizing, leaving the latter function to be cared for largely by the form and interrelationships of the various surfaces, rather than dependent upon a constant juggling performance on the part of the driver, or on some complex automatic device.



A FLYING BOAT.

And the aeroplane of the future must, like the one just described, be able to alight upon or start from, both land and water.

The constant growth in sizes of the bodies, and the simplification of running gears, seem to suggest that in the ultimate machine there will be a blending of these two elements—involving the superseding of a present anomalous quality of structure by winged bodies, houseboat-like in general type, with their lower portions directly exerting the "running gear" functions, and the wings simply mounted rather high.

The motors of the future will almost certainly be placed in front, because of the greater safety of this construction. Structural integrity must be secured through the use of members and surfaces of sufficient thickness to afford space for rigid trussing. This will require the reduction of head resistances, not by the difficult and unnecessary expedient of keeping down the projected area, but by the more scientific and bird-like construction, wherein the principal of the "reaction impulse" is made to nullify to a great extent the head resistance. Even to the tension members of the structure must this principle be extended, and thus the aeroplane must be expected to present only a few heavy cables, in place of the multitude of fine wires now generally employed. Fabric will probably continue to be used for the planes, as it is superior in strength, durability and ease of application to sheet metal, sometimes proposed for the wings. The use of canvas on sails of boats, involving analogous requirements, is suggestive in this connection. Of course the machine will afford complete inclosure of the passengers, because of the reduced resistance to be secured in this way, as well as for reasons of comfort.

The question of power is not likely to require special solution. The efficiency of the machine of the future will make high reliability more important than light weight or extreme power, so probably the aeroplane motor will always remain substantially a counterpart of the internal combustion motors used in automobiles and motor boats.

A NOVEL WINDMILL IDEA.

Editor INVENTIVE AGE:

Dear Sir:—

Since my last letter to you appearing in the September issue, I find myself flooded with questions which I do not find the time nor the inclination to separately answer, but if you will publish the following, it will doubtless reach those who propounded the inquiries:

Question first. How many million windmills would be required to properly harness the winds that sweep the earth in order to do its manual work?

Second. Where could we find room to put so many mills where they would not be an eye-sore and where they would not occupy valuable space?

These two questions seem pertinent and I believe they can be answered satisfactorily to any fair mind if I can but make clear what work might be done on a limited area, say for illustration, in a cultivated field of 160 acres devoted to general farming.

Let us assume the field is square. Each side would then be half a mile long. On one side of the field, instead of a fence, we would construct a windmill extending full half mile, built low and drum-like, in sections, say 20 feet long, each section capable of running independently or simultaneously with all other sections around a horizontal axis and storing the power thus generated day and night. No more space would be required to build such a contrivance than is monopolized by an ordinary worm, or stake and ridered fence. The timber used in such a fence, were it in lumber form, would go far toward the construction of such a mill.

Now let us assume that the line along which the mill is built extends east and west, and the mill being so simply made that it could not change its position as the wind changes its own direction. It is evident that this particular mill could only take care of such winds as move at right angles to it—in other words, it could generate and store power from north and south winds only. Therefore, in order to utilize east and west winds, we would build a mill extending along a north and south fence line. I am assuming a very simply constructed mill, and yet one efficient to furnish all the power likely to be needed within this particular half mile enclosure, which power, however great, might be doubled by elevating mills above and parallel to those already mentioned.

Having roughly and briefly given what I conceive to be ample windmill power likely to be used on 160 acres of tillable land, I leave my inquisitors to figure out how many mills are necessary to satisfy the great world of labor; and further I must leave them to draw on their own imagination as to where the mills should be placed—if the above suggestion as to position is unsatisfactory. While I am aware of the homely fact that "we cannot eat our cake and have the dough," I feel equally sure that wind utilized in one place is not afterward arrested in another, and, yet mills half a mile apart will be kept busy though they extend throughout counties and across state lines, for each particular windmill arrests and puts to service a comparatively thin strata of moving air, which strata becoming a void is immediately filled from the vast volume overhead.

We come now to the last question that I shall have space to consider: What kind of a windmill would you suggest for a cyclone state? Cyclones seem to be winds which, having no useful work to do, are concentrated on destruction. To prevent their concentration, we in a measure, restrain their destroying power. I believe therefore, that if such mills as have already been outlined above are thickly planted over the southern states, that they would utilize much of the gathering force of the winds, and that by the time they reach the middle states, in which cyclones do the greatest damage, they will have been shorn of much of their desolating power. I would say that the windmill capable of utilizing the greatest amount of wind is the one to be set to work in a cyclone state—but you will need them miles long and many of them.

E. C. RODWICK,
Ukiah, Cal.

COMMISSION NAMED TO TEST INVENTIONS SUBMITTED BY POSTAL EMPLOYES.

A special commission was created by Postmaster General Hitchcock to consider the merits of mechanical and labor-saving devices invented by postal employes and submitted by them for use in the postal service. On the recommendation of the Postmaster General $10,000 was appropriated by Congress, which he is authorized to pay in his discretion as rewards to postal employes whose inventions are adopted for use in the postal service.

The following officers of the department will compose the commission: Robert S. Sharp, chief post office inspector, chairman; C. F. Trotter, assistant superintendent of the division of salaries and allowances; B. L. Andrus, superintendent of the mail lock shop; C. H. Buckler, superintendent of the division of registered mails; W. J. Satterfield, chief clerk of the bureau of the fourth assistant postmaster general, and A. L. Davis, assistant director of the postal savings systems.

WILL MAKE TESTS.

This commission after investigating and making appropriate tests will make a report to the Postmaster General with suitable recommendations as to the acceptance of devices and the payment of rewards to postal employes whose inventions are adopted for use in the postal service. Mr. Hitchcock is of the opinion that the offering of such rewards will be an incentive for ingenious men of the postal service to take a greater interest in their work and encourage them to invent devices of various kinds which will improve the equipment and expedite the handling of the mail.

In addition to the Postmaster General's special recommendation to the recent Congress on the subject he advocated the adoption of the reward system in his last two annual reports. It is believed by Mr. Hitchcock that the idea will prove so successful that Congress will feel justified in perpetuating the appropriation.

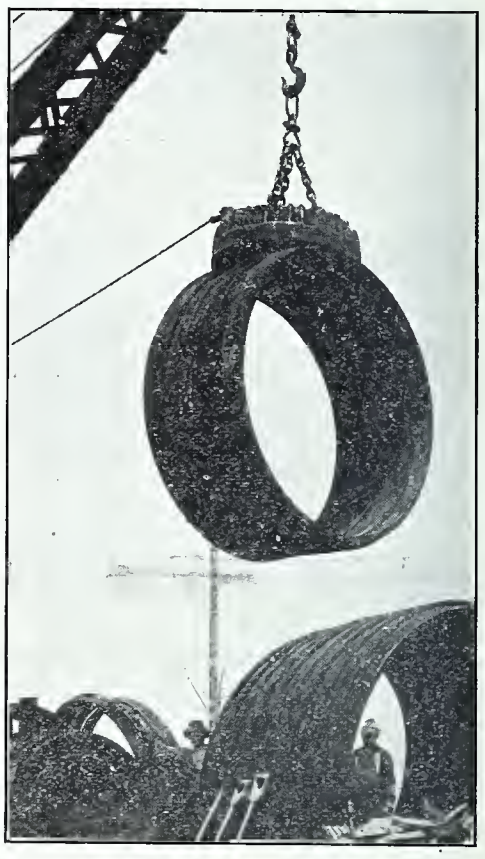
Bank Slot Machines.

Drop a nickel, or a dollar, in the slot, and you will be putting it in bank. Budapest, which is an up-to-date city in many ways, having the only telephone newspaper in the world, has a bank which has devised this means of increasing the amount of money handled by its savings department. It has placed slot machines at various places in the streets, and the persons who place money in them are supplied with a receipt in exchange, which may be exchanged for a bank book, or kept until the depositor wishes to withdraw the money. The idea is that people will deposit small amounts, if they do not have to take the trouble to go to the bank to do so. It is also believed that the sight of the machines reminds them of the possibility of saving their money in this convenient manner, instead of spending it. It is said that the deposits of the bank have shown a remarkable increase since the plan was started.

LOCOMOTIVE WHEEL TIRES RAISED BY LIFTING MAGNETS.

The wonderful power of a modern lifting magnet is illustrated by the accompanying photograph which shows the handling of five locomotive driving wheel tires, each 65 inches in diameter, by a crane and lifting magnet at Chicago at the plant of the Chicago and Northwestern Railway.

This electro magnet measures 43 inches in diameter and has a net weight of 3250 pounds. The average current consumption is 27 amperes at 220 volts. It will lift one ingot weighing 6000 pounds, or two if the ground man places the magnet, and it will raise skull cracker balls up to 20,000 pounds and slabs up to 32000 pounds.



MAGNET RAISING FIVE WHEEL TIRES.

This is only one more illustration, though a striking one, of the growing use of this agent in various forms of industry. It is employed for as widely different purposes as the extraction of bits of iron from the eye of a human being, and the lifting of heavy masses of iron, the unwieldy and cumbersome nature of which would involve serious difficulty and labor if an attempt were made to move them in some other way. Some months ago the press recorded the salvage of a quantity of iron bars which had been sunk through an accident to the boat which carried them, in a river. They were in a considerable depth of water, and to attempt to raise them by the ordinary methods would have necessitated the aid of divers. A huge magnet did the work with a minimum of assistance in the way of other machinery. Magnets are used to gather up scrap iron, filings and similar refuse, and they very successfully clean up a work room.

THE INVENTIVE AGE contains sound advice to inventors and patentees. For lack of such advice many have lost money. Subscription price, one dollar a year.

A POWERFUL ELECTRIC MAGNET FOR REMOVING STEEL OR IRON FROM THE EYE.

The accompanying illustration shows a powerful electro-magnet for eye operations, designed by Prof. O. Haab, of the Zurich eye hospital in Switzerland, and constructed by the Maschinenfabrik Oerliko near Zurich.

This electro magnetic apparatus has a powerful coil which is furnished with current through a foot switch, the magnet having special pole pieces of different designs which may be screwed in place as desired. It is stated that the apparatus replaces the permanent magnets formerly used by doctors for removing steel and particles of iron from the eye.



MAGNET EXTRACTING STEEL FROM EYE.

This eye magnet uses a direct current of 60 to 300 volts, about one kilowatt being used as a maximum. The weight of the magnet is 290 lbs., and when a direct current is not available, or a motor generator, a mercury converter or a rotary converter is used to change the alternating current to a continuous current.

The powerful Haab eye magnet has been in every way a success in the trials made of it at the eye hospital at Birmingham, England, and at the London Hospital at Whitechapel.

BOOK REVIEWS.

The Modern Gasoline Automob'le

By Victor W. Page, M. E.,

The Norman W. Henley Publishing Co. N. Y.

The last word in automobile literature is represented by this volume, which is a most valuable treatise for those who wish reliable information on all phases of gasoline automobile construction. The author was formerly technical editor of the Automobile Journal, and brings to his work widely varied experience, and a language that may be readily understood by the laity, being non-technical and thoroughly practical. The book embodies advice and helpful hints from a recognized authority, who has been a driver and designer of automobiles since the inception of the motoring industry in America. All historical matter has been eliminated from the book, as well as padding and descriptions of obsolete mechanisms, leaving a condensed, meaty statement of what motorists must need to know. In most treatises of this character, the mistake has been made of assuming that the reader had a certain knowledge of mechanics; but many business or professional men who buy machines and wish to run and repair them themselves, have not the least familiarity with mechanical principles. The present book defines the essential elements of the modern motor car, and describes actual forms and typical mechanisms so that their practical application and relations can be easily understood. Further on the author explains, for the benefit of garage owners and repairmen, new developments and discoveries in automobiles, such as methods of valve timing to obtain more power and speed, the best practice in installing carburetors and magnetos, etc. It is strictly up to date, giving many innovations which the past year or so has seen, such as sleeve valve motors, torpedo body forms, self-starters, etc. It has five hundred illustrations and ten large folding plates, and is superior to any treatise heretofore published on the subject.

Gasoline Engines

By A. Hyatt Verrill,

The Norman W. Henley Publishing Co. N. Y.

A simple and yet comprehensive work on the gasoline engine, describing its character, construction and operation; how to install it, how to use it and how to remedy troubles encountered. It is particularly intended for those with little knowledge of engineering, and technical words have been largely eliminated from the text. A glossary provides a lucid explanation of such terms as are indispensably used. An alphabetically arranged table of troubles covers the chief accidents that occur in motor operation, and explains the remedy. In view of the large number of gasoline motors in use today, not only in automobiles but on the farm for various purposes, in the water and in the air, and in view of the widespread ignorance in regard to their operation, it is marvelous how few troubles occur, and it speaks well for the modern motor that there are so few. If a gas motor, says the author, is properly adjusted and runs smoothly for an hour, there is no reason why it should not continue to run for years, as long as it is fed and cared for. It is in an effort to disseminate needed information that this treatise has been written, and in its compact and handy form, with illustrations, it should be of practical value to motorists generally.

ELECTRIC FLOOR SCRUBBER.

The accompanying illustration shows the method of operation of an invention of unusual interest. It is a portable double electric floor scrubbing machine, which will thoroughly scrub any kind of floor at the remarkable rate of 150 square feet in a minute, or as fast as the operator can conveniently walk up and down the room.

This electric machine covers a floor space of 27 inches in width and sprays the water on the floor from the tank secured on the handle. While there have been many inventions for scrubbing floors, this new one has exceptional features which have been recognized even by the skeptical. Not only is the machine a valuable labor-saving device for renovating and wax polishing wood floors, but a heavier and more powerful machine is also arranged on the same principle for grinding and polishing marble, cement, terrazzo and composition floors. One of the double machines does as much work in a day as fifteen men skilled in the art can accomplish, and with better results. The grinding is done by using carborundum blocks attached to a revolving disc.



DOUBLE SCRUBBING MACHINE WORKING OVER MOSAIC FLOOR.

It may be stated that the entire machine consists of a one quarter horse power mounted on a shell containing a revolving base. To this is automatically clamped a disc or brush, as may be required. It is due to the invention of ball bearings that so small a motor can be used on a machine of this kind. The operator can attach it directly to any incandescent lamp socket.

In European countries, much more attention is given to the care of wood floors in the galleries, palaces and public buildings than in the United States. The old methods of polishing the parquetry with brushes attached to the shoes of the servant, who moves over the surface as one would skate, brushing out the wax and producing a high polish, are still in vogue. Of late years particular attention is being paid to installing floors of the best quality in new and handsome buildings. These are composed of cement and marble in various forms, which have to be ground to a smooth surface and polished like glass. The old methods of hand rubbing and polishing these floors with a "holy stone," attached to a pole, is gradually being replaced by grinding machines electrically operated, which accomplish some four hundred square feet in a day compared with thirty-five feet by hand methods.

The accompanying photograph illustrates the double scrubbing machine at work on a mosaic floor. The brushes revolve in opposite directions, making the machine extremely easy to move and control. The motor is started without load, after which the handle is raised, withdrawing the caster supports from the floor and allowing the full weight to rest on the disc or brush. These casters also give the operator instant control of the machine. The bodies of the machines are flexibly connected to the iron handle, allowing the brushes to adjust themselves to the curvatures of the floor. It will scrub right up to the base.

This electric renovator and polisher will scrub 8,000 feet of wood flooring in one hour, and still greater surfaces of polished marble or mosaic, and it will perfectly wax-polish any floor. It can be connected to the electric lamp socket, and is so easy to operate that even a woman can run it. Hot water (from the tank) containing a little soap powder is sprayed on the floor to keep the brushes lubricated, and the machine is moved rapidly over the surface. It does not splash.

The small electric motors are mounted on polished aluminum shells containing revolving plates, and to these are automatically attached a scrubbing brush or other disc as may be required.

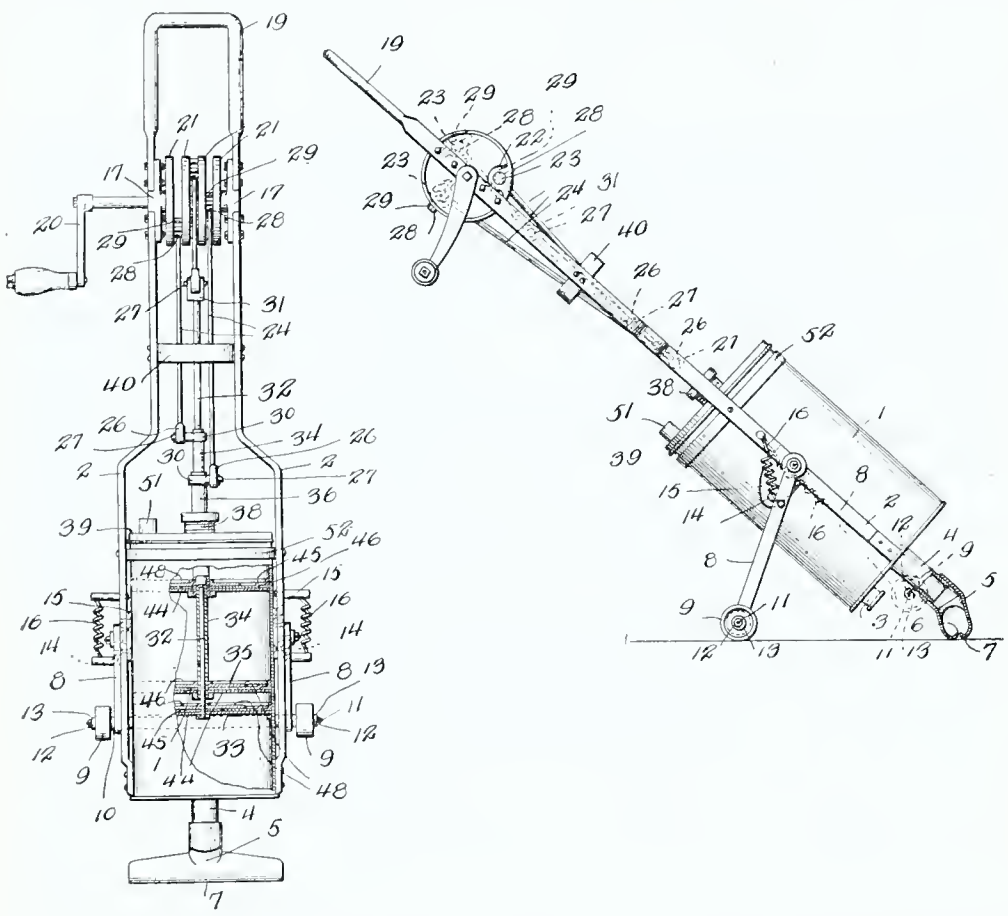
It is said that the machine consists of only five working parts, which are enclosed within a dust and waterproof case. The gears and ball bearings run in grease, and require very little attention. The weight of a single machine is forty-five pounds.

CLEVER NEW PATENTS.

VACUUM CARPET CLEANER—THEATRICAL ILLUSION APPARATUS—HAT.

Vacuum Carpet Cleaner.

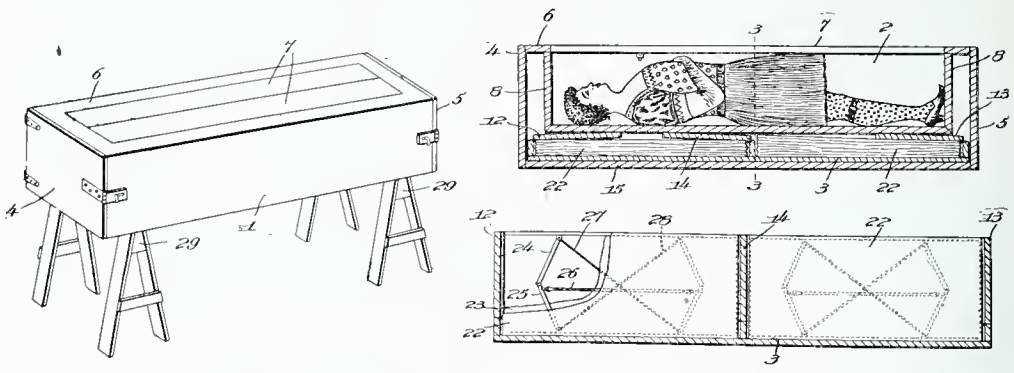
Most vacuum cleaners are operated by electricity or some similar source of power, but an invention of D. A. Minnich, of York, Pa. is arranged to be worked without expensive motors, merely by the application of hand power. The cylinder (as illustrated in the side elevation and plan of the cuts) has an inlet tube at its lower end, with a nozzle and an opening so arranged that the carpet may be cleaned without injury. The cylinder is supported by arms journaled in rollers at the bottom and provided with stop pins 14 to limit their rearward movement. The driving shaft is composed of four crank disks, the outer ones having lugs in which the wrist pins 23 are secured. Three pistons are employed in the cylinder, each with a rod and pitman and all operated by the crank disks. Each wrist pin has its opposite ends secured in lugs in two adjacent disks. The connecting rods 24 have studs 25, the lower ones fitting over pivot pins 27 and the upper ones clamped around the wrist pins. The pivot pins are formed integrally with collars 30, and the fork 31 is secured in the lowest piston in the cylinder. Upon this rod 32 is fitted a sleeve which constitutes the piston rod for the intermediate piston 35 and which is actuated



from the driving shaft simultaneously with the rod 32. Around the sleeve 34 is a second sleeve 36 which carries the uppermost piston 37, the sleeve 36 having a collar and pivot pin which projects in a direction opposite to that of the pin 27, and a rod extending from this pin to the remaining wrist pin 23. A packing box 38 prevents the escape of dust-laden air through the top. The pistons consist each of a pair of plates with packing between, secured to the piston rod through a spider 49, with valves and openings to permit the passage of the dust to the discharge tube. The device is guided by the handle in one hand of the operator, while the crank shaft is rotated by the other hand. The connecting rods and piston rods reciprocate so that the pistons will move, and as the wrist pins are spaced at equal distances around the crank disks, suction through the cylinder will be created. As the piston rises in the cylinder the valves lie flat and a partial vacuum will be formed, drawing the dirt from the carpet through the nozzle and into the cylinder. On the down stroke of the piston, the openings in the piston will be uncovered so that the dust will escape through the outlet 51 at the top of the cylinder. With the addition of hose, the device can be adapted for cleaning curtains, wall paper, and the like.

Theatrical Illusion Apparatus.

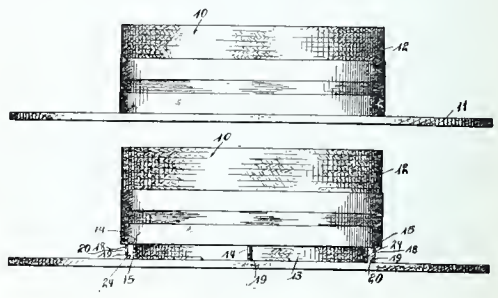
A device by means of which a person may be made to appear in a box which has previously been shown to be empty, has been patented by Wm. Hanlon, of Cohassett, Mass. The apparatus is designed in a simple and ingenious manner to effect the illusion that deceives the audience. A double box is provided, as seen in the drawing, the inner box being collapsible and being adapted to be slipped between the double walls of the case and so made as to give the impression when withdrawn of having occupied the entire space inside the outer case. The outer case has inner walls forming a compartment, between which and the outer walls is the removable box. This has end walls which fold on hinges. It is slipped into the outer case from openings in the end thereof, and when in place its bottom and folded end wall and partition occupy the space between the double bottom walls and of the outer casing, while the side walls lie between the double side walls and of the casing. The walls and partition of the box have spring hinges which cause them to rise upright as soon as they pass from under the false bottom of the casing in withdrawal. Inside the removable box is a collapsible box with flexible double walls, 22 and 23, doubled, to conceal the means for expanding the box. Links, 25 and 26, connected by an elastic cord, are pivoted to the top and bottom of the box, and have a tendency to raise the top of the box, which can again be collapsed by the exertion of force. On the stage, the device is placed



on a trestle, holding it free from the floor. Then the removable box is withdrawn from one end of the casing, and while this is being done the partition walls of the removable box spring uprightly and the collapsible inserted boxes expand, the action being so carried out and hidden by the swinging door and the actors that the expansion of the collapsible box is not observed by the audience. The impression is given that the removable box has completely filled the casing, and that after its removal the casing is empty. Then the casing is taken from the trestle and placed on end, and the doors are opened, allowing the person inside to step out.

Hat.

The necessity for admitting air to the head, particularly the forehead, during warm weather, has led to the invention of a ventilating hat. Jean H. Matson, of Loomis, Nebr., is the patentee, and his device, which looks like an example of ordinary headwear, can be adjusted so that the crown will be slightly raised from the brim when desired. The brim has a flange provided with prongs preferably made of wire and bent downward at their upper ends as at 18. These downwardly extending portions are formed to provide grooves for engagement with a wire secured to the crown. The prongs hold clamps to prevent undesirable lateral movement, and fastening devices prevent their displacement from the flange. It is thus seen that the depending member 18 is held yieldingly with respect to the flange 13, which formation permits a wire on the crown to be forced downwardly into engagement with either of two notches, the crown being seated on the brim while engaged by the lower notch or



raised therefrom while engaged by the upper notch. This latter position allows a free circulation of air over the head, and obviates the necessity of removing the hat when it is desired to cool the brow.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

CHARLES BOLDT CO. v. NIVISON-WEISKOPF CO.

(Circuit Court of Appeals, Sixth Circuit. March 5, 1912. 194 F. R. p. 871.)

1. PATENTS—DESIGNS—REQUISITES TO VALIDITY.

The exercise of the inventive faculty, as well as originality and beauty, are all essential to the patentability of a design.

2. PATENTS — SUIT FOR INFRINGEMENT—DEMURRER FOR INVALIDITY OF PATENT.

The question of want of novelty and invention as disclosed by the specification of a patent may be raised by a demurrer by a defendant charged with its infringement, and in a clear case, where, taking into consideration the commou and general knowledge with respect to the art, the court can say that the want of novelty and invention is so palpable that it is impossible that evidence could show the fact to be otherwise, the bill may be dismissed.

3. PATENTS—NOVELTY—EVIDENCE.

Extensive or general use of a patented article is evidence of its utility, but is not conclusive in that respect and much less of its patentable novelty.

WESTEN MFG. CO. et al. v. HARTFORD et al.

(Circuit Court of Appeals, Third Circuit. Feb. 17, 1912. 194 F. R. p. 874.)

PATENTS—VALIDITY AND INFRINGEMENT—SHOCK ABSORBER.

The Truffault reissue patent, No. 12,437 (original No. 695,508), for a frictioual retarding means for spring-supported vehicles, is not invalid for laches in applying for the reissue, because of the broadening of the claims, nor for anticipation, and discloses patentable invention; also held infringed.

STEIGER et al. v. WAITE GRASS CARPET CO.

(Circuit Court, E. D. Wisconsin. Feb. 21, 1912. 194 F. R. p. 878.)

1. PATENTS — SCOPE — DEVICES WITHIN PRINCIPLE OF INVENTION.

A patentee, who describes and illustrates what he deems the best embodiment of his invention, is not confined to such form, but is entitled to any other form which is within the principle of operatiou of his invention.

2. PATENTS-VALIDITY AND INFRINGEMENT—FEEDING DEVICE FOR GRASS TWINE MACHINE.

The Jerrems patents, No. 745,625 and No. 824,871, for feeding mechanism for grass twine machines, having as elements opposing blades, both having serrated edges and one a vibratory motion, while valid and meritorious and showing a considerable advance in the art, cannot be construed to cover a device for handling the grass stems by what is called the rotary system, which was in the prior art. As so construed, held not infringed by a device having a rotary member instead of the reciprocating blade of the patent and the opposing blade without serration.

OSHKOSH GRASS MATTING CO. v. WAITE GRASS CARPET CO.

(Circuit Court, E. D. Wisconsin. Feb. 21, 1912. 194 F. R. p. 885.)

PATENTS—VALIDITY AND INFRINGEMENT—TWINE GRASS MACHINES.

The Monahan and Kiereu patents, No. 688,789 and No. 785,070, for grass twine machines, disclose invention, being a step in advance of prior machines iu the line of cheapness, simplicity and speed, but are for improvements only, and of narrow scope. As so construed, held not infringed.

F. E. MYERS & BRO. v. FAIRBANKS, MORSE & CO.

(Circuit Court of Appeals, Seventh Circuit. Jan. 2, 1912. 194 F. R. p. 971.)

1. PATENTS — INVENTION — POWER FORCE-PUMP.

The Myers patent, No. 670,092, for a power force-pump, is void for lack of invention, in view of the Walrath patent, No. 281,809, for a steam engine, which accomplished the object stated by Myers to be the purpose of his device in practically the same way: no invention being required to adopt the same means to accomplish the same end in a pump.

2. PATENTS — INVENTION — ADAPTATION OF OLD MEANS TO ANALOGOUS SUBJECT.

It does not involve invention to apply an old process or machine or idea to a similar or analogous subject, with no change in the manner of the application and no substantially different result.

DIEDERICH v. W. SCHNEIDER WHOLESALE WINE & LIQUOR CO.

(Circuit Court of Appeals, Eighth Circuit. March 22, 1912. 195 F. R. p. 35.)

1. TRADE-MARKS AND TRADE-NAMES—NATURE OF TRADE-MARKS—STATUTES—"SIGN."

Under Act Feb. 20, 1905, c. 592, §§ 1, 16, 33 Stat. 724, 728, (U. S Comp. St. Supp, 1909, pp. 1275, 1283), authorizing the registratiou of trade-marks by filing an application specifying the mechandise to which the trade-mark is appropriated, a description of the trade mark, and a statement of the mode in which the same is applied and affixed to goods, and authorizing an action for the wrongful use of a trade-mark by the use of signs, labels, etc , intended to be used in connection with the sale of merchandise, a trade-mark is only valid when actually affixed to a commodity, and one may not acquire a trade-mark in a sign placed on a building, the word "sign" being used to indicate a mark, symbol, token or emblem affixed to the article sold.

2. TRADE-MARKS AND TRADE-NAMES—INFRINGEMENT—NATURE OF INJURY.

What is not and cannot be a trade-mark cannot be infringed as a trade-mark.

3. COURTS — FEDERAL COURTS — UNFAIR COMPETITION— JURISDICTION—CITIZENSHIP.

Where the parties are citizens of the same state. the federal courts have no jurisdiction to determine the question of unfair trade in a suit brought by one against the other.

LORD & BURNHAM CO. v. PAYNE.

(Circuit Court of Appeals, Third Circuit. Feb. 16, 1912. Rehearing Denied April 2, 1912. 195 F. R. p. 74.)

PATENTS—VALIDITY AND INFRINGEMENT—EAVE FOR GREENHOUSE.

The Burnham patent, No. 583,247, for a metal eave, designed specially for use in greenhouses, consisting of an angle iron located between the side wall and the roof, having one member in substantially the same plane as the plane of the roof, with the remainder in the interior of the building, so as to be affected by the temperature therein and to communicate the heat to the outside member, thereby preventing the formation of icicles and the accumulation of ice and snow, was not anticipated, and in view of its superiority for the important purpose sought, over any structure in the prior art, discloses patentable inveution, and not merely mechanical skill. Also held infringed.

NEW YORK TIMES CO. v. STAR CO.

(Circuit Court, S. D. New York. April 5, 1912. 195 F. R. p. 110.)

1. COPYRIGHTS—STATUTORY PROVISIONS—POWERS OF CONGRESS.

The subject of statutory copyright is wholly within the powers of Congress, and it may restrict in any way the maintenance of actions or proceedings in the courts for infringement of copyright.

2. COPYRIGHTS — INFRINGEMENT — JURISDICTION—INJUNCTION.

Under Act Cong. March 4, 1909, c. 320, § 12, 35 Stat. 1078 (U. S. Comp. St. Supp, 1909, p. 1293), providing for copyright, and declaring that no "action or proceeding shall be maintained for infringement of copyright" uutil the provisions with respect to the deposit of copies and registration of the work has been complied with, and that actions or proceedings shall be cognizable by enumerated courts, and that civil actions may be instituted in the district of which defendant is an inhabitant, etc., an injunction enjoining the publication of an alleged copyright work, issued in a suit in equity and served before two copies of the work have been deposited in the copyright office or mailed, addressed to the register of copyrights, is void becausc of want of jurisdiction of the suit; the quoted phrase iucluding a suit in equity.

GARNIER v. ROSSMAN.

(District Court, E.D. Missouri, E D. March 5, 1912. 195 F. R. p. 175.)

TRADE-MARKS AND TRADE-NAMES—WORDS SUBJECT TO TRADE-MARK.

The word "Abricotine," used in connection with the sale of a cordial or liqueur, was an arbitrary coined word, not descriptive of the goods, and was therefore a proper subject of trade-mark.

UNITED STATES CONSOL. SEEDING RAISIN CO. v. SELMA FRUIT CO.

(Circuit Court of Appeals, Ninth Circuit. Feb. 5, 1912. 195 F. R. p. 264.)

1. PATENTS—PROCESS PATENT—CONSTRUCTION OF CLAIMS—"SUBSTANTIALLY AS SET FORTH."

The words "substantially as set forth" at the end of a claim in a process patent have the effect of importing into the claim the particulars of the specification relating to the process to illustrate its operation, but not the function or operation of the mechanism there discribed, nor can they extend the patent beyond the claim which bounds the patentee's rights.

2. PATENTS—PROCESS—FUNCTIONS OF MACHINES.

A valid patent cannot be obtained for a process which involves nothing more than the fuuctions or operative effect of machines which are the subjects of other pateuts or applications.

3. PATENTS—NOVELTY—PROCESS OF TREATING RASINS.

The Forsyth patent, No. 611,782, claims 7 to 12, for a process of treating raisins, which consists of heating and then quickly cooling them, to produce a hard or brittle condition, and then subjecting them to abrasive and separating treatment whereby they are stemmed and cleaned, are void for lack of novelty in view of the state of the prior art.

GENERAL ELECTRIC CO. v. SUTTER et al.

Circuit Court of Appeals, Third Circuit. March 4, 1912. 195 F. R. p. 280.)

1. PATENTS — INVENTION — ELECTRICAL TRANSFORMER.

The Hall patent, No. 829,180, for an electrical transformer, differing from prior structures ouly iu the substitution of eccentric for concentric coil mounting, is void for lack of invention.

2. PATENTS — INVENTION — ELECTRICAL TRANSFORMER.

The work of a trained electrical engineer, who, following geueral directions given by his superior officer, made certain changes in an electrical transformer for the purpose and with the result of effecting economies in construction, without departing from known principles, held not to have involved iuvention.

3. PATENTS — INVENTION — ELECTRICAL TRANSFORMER.

The substitution in an electrical transformer of eccentrio for coucentric coil mounting did not involve patentable invention, in view of the fact that the general prineiples and practice of ventilating spaces in transformers were well known, and the desirability of keeping the transformer coils close together within the magnetic circuit for electrical advantages aud of separating them outside the circuit for ventilating purposes.

McCREERY ENGINEERING CO. v. MASSACHUSETTS FAN CO. et al

(Circuit Court of Appeals, First Circuit. April 9, 1912. 195 F. R. p. 498.)

1. PATENTS — INVENTION — REDUCTION TO PRACTICE.

Drawings and verbal descrption of an invention, however completely they may show conception, are insufficient to establish reduction to practice, unless filed as an application for a patent, when they are accepted as a constructive reduction to practice.

2. PATENTS — VALIDITY — INVENTION "ON SALE" FOR MORE THAN TWO YEARS.

Proof of a mere contract to construct from plans, and to deliver in the future, a machine or manufacture not shown to have been previously built, is iusufficient to establish that the machine or manufacture was "on sale" within the meauing of Rev. St. § 4886 (U. S. Comp. St. 1901, p. 3382), so as to defeat a patent therefor not applied for until more than two years after such contract was made, in the absence of any evidence that the inveution had been reduced to practice at the time the executory contract was made.

3. PATENTS—INFRINGEMENT— ATTACHMENT OF INFRINGING ARTICLE TO REALTY.

The attachment of patented machinery to a building so that it becomes part of the realty does not give rise to rights of use against the patentee.

4. COURTS — JURISRICTION OF FEDERAL COURTS—SUIT AGAINST STATE.

A suit by the owner of a patent for a ventilating apparatus against county commissioners to enjoin the use of an infringing apparatus, which has been installed in a county courthouse in Massachusetts, is not a suit against the state so as to be beyond the jurisdiction of a federal court, under Const. Amend. 11, since the state has no title to the property affected, which is in the county, and although the building is to some extent devoted to state uses, it cannot be assumed that an injunction would interfere with such use,

COMPUTING SCALE CO. v. STANDARD COMPUTING SCALE CO., Limited.

(Circuit Court of Appeals, Sixth Circuit. April 2, 1912. 195 F. R. p. 508.)

1. PATENTS—VALIDITY—COMPUTING SCALE.

The Hotsapillar patent, No. 728,577, for a computing scale, is void because the device described and shown in the specification and drawings was incomplete and inoperative, and was only made operative by changes which required the exercise of invention and were patented by others.

2. PATENTS—INVENTION—REDUCTION TO PRACICE.

The grant of a patent is based on the disclosure of an invention, which disclosure is made by the filing of the application. The invention is not made until there has been a reduction to practice, either actual or constructive, and this question must be determined by the situatiou existing when the application is filed, and not when the patent is issued. If the applicatiou does not disclose an operative device or one which can be made operative by the use of the ordinary skill of the art, it cannot be aided by the subsequent inventions of others made before the date of issuance.

SAN FRANCISCO CORNICE CO. v. BEYRLE.

(Circuit Court of Appeals, Ninth Circuit. Feb. 5, 1912. 195 F. R. p. 516.)

1. PATENTS—VALIDITY—PRESUMPTION AND BURDEN OF PROOF.

The grant of a patent is prima facie evidence that the patentee was the first inventor of the device or discoverer of the art or process described, and of its novelty, and the burden rests ou a defendant denying its validity to establish such defense beyond a reasonable doubt.

2. PATENTS-VALIDITY AND INFRINGEMENT—PROCESS OF CASING WOOD WITH METAL.

The Beyrle patent, No. 887,995, for a process of casing wooden moldings, etc., with metal, by means therein described, while for an improvement in the art, was not anticipated, and discloses invention, the method shown effectiug a saving in labor and time and in material; also, held infringed.

RYAN CAR CO. et al. v. LIVE POULTRY TRANSP. CO.

(Circuit Court of Appeals, Seventh Circuit. Oct. 4, 1911. Rehearing Denied March 29, 1912. 195 F. R. p. 525.)

PATENTS—INVENTION—POULTRY CAR.

The Mudd patent, No. 539,229, for an improvement in poultry cars, which consists in moving the food and water trough, which had previously been placed on one side of each coop into the partition between the coops. while accomplishing improved results, iuvolved no mechanical change but merely a change of location, and in view of the prior art and of the Street patent for stock cars in which the troughs were similarly located, is void for lack of invention.

YALE & TOWNE MFG. CO. v. WORCESTER MFG. CO.

(Circuit Court of Appeals, First Circuit. April 9, 1912. 195 F. R. p. 529.)

TRADE-MARKS AND TRADE-NAMES—NAMES SUBJECT TO APPROPRIATION—NAMES OF PATENTED ARTICLE

The rule applied that the owner of a patent cannot, by registering the name of the patentee, by which the patented article was known, acquire the exclusive right to use the same as a trade-mark for such article after the patent has expired. Gray v. Grinberg, 159 Fed. 138, 86 C. C. A. 328, and C. & G Merriam Co. v. Ogilvie, 170 Fed. 167, 95 C. C. A. 423, applied.

MECHANICAL INVENTIONS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Michael Ryan, Somerville, N. J. Rail Guard.—Heretofore where a railroad crossed a street or road, planks have generally been used inside and outside of the rails. Great difficulty has been experienced with the inside planks, as the flanges of the car wheels continually force dirt and snow between the rails and such planks and lift the latter, which sometimes results in derailing cars or otherwise injuring a train equipment, or frequently causes the feet of persons and animals to become caught between the planks and the rails. The object of the present invention is to provide a rail guard capable of dispensing with the inside planks, and of eliminating the danger incident to the use of the same, and adapted to be readily applied to a track and easily removable therefrom when necessary to repair the same, or for any other purpose. The guard rail comprises in its construction an inner vertical side or wall adapted to fit against the web of a rail, and having an inclined upper edge to fit against the underside of the head of a rail, an outer inclined side or wall provided at the bottom with a foot flange, and an integral top having a horizontal head portion and a longitudinally grooved portion extending downwardly from the head portion and inwardly to the upper portion of the inner side or wall.

Sebastian L. Goodin, Farber, Mo. Wireless Check Row Corn Planter.—It is the object of this invention to provide a check row attachment adapted to be readily applied with little change to various corn planters, and equipped with means for enabling the marker wheels to be easily adjusted either at the end of a row or in the field, should the machine get out of check. The invention comprises in its construction a transverse rotary marker shaft extending across the front or runner frame of the planter, marker wheels mounted on the marker shaft and provided with markers and having tappets, seed dropping mechanism carried by the front or runner frame, and a transverse rock shaft extending entirely across such frame and mounted thereon and provided with arms arranged in the path of the tappets of the marker wheels. The rock shaft is connected with the seed dropping mechanism, and it is adapted to be rotated by operating mechanism including a lower pulley mounted on the marker shaft, an upper pulley mounted on the runner frame. and a belt connecting the upper and lower pulleys.

Charles J. Burton, Lincoln. Neb. Two patents.—The invention of the first patent relates to a folding booth for voting and analogous purposes, the primary object of the invention being to provide a structure adapted to be compactly folded so as to occupy but very little space, and capable of being easily transported, and which when set up will constitute an effective and completely enclosed booth within which a voter may prepare his ballot in entire secrecy. The booth comprises in its construction spaced standards, foldable connections between the standards, upper curtain supporting arms pivoted to the standards, lower shelf supporting arms also pivoted to the standards, a curtain extending across the space between the standards and having openings through which the arms extend, a shelf supported on the lower arms within the curtain, and braces pivoted to the standards and detachably connected with the upper and lower arms.

It is the aim of the invention of the second patent to improve the booth of the first patent in respect to the means for supporting the curtain or wall in position for use and for folding the parts compactly when not in use. It includes standards, lower shelf supporting arms detachably connected at their lower ends to the standards, upper curtain supporting arms pivoted at their inner ends to the standards, upper inclined braces extending from the standards to the outer portions of the curtain supporting arms and pivoted at their upper ends to the same, lower oppositely inclined braces pivoted at their lower ends to the outer portions of the shelf supporting arms and extending upwardly to the lower portions of the upper braces and pivotally connected to the same, means for detachably connecting the braces with the standards at a point between the upper and lower arms, a curtain extending across the space between the standards and having side portions arranged at the inner faces of the said arms and provided at the lower curtain supporting arms with openings, and a transverse shelf having hooks extending through the openings of the curtain and engaging the shelf supporting arms.

Nathan S. Wakefield. Los Angeles, Cal. Diaphragm for Sound Reproducing Instrument.—The object of the invention is to provide a diaphragm of the chambered type consisting of a novel arrangement of disks fastened together to form a unitary structure and so designed as to reproduce the delicate tones or sound shades, as well as accurately reproducing the volume and register of the original sound without the disagreeable harsh metallic sounds, as is the case with diaphragms commonly in use. It consists of a flat disk having one side hollowed out in the form of a shallow chamber surrounded by a peripheral flange, and a second disk bearing against the flange and rigidly secured thereto, one of the disks having a central hub forming a sounding post against which the other disk bears, the said hub and the disk bearing against the same being adapted to have a fastening means inserted therethrough for connecting the disks in fixed spaced relation and securing them to a support.

Joseph S. Shepherd, Vinton, Va. Uncoupling Device for Cars.—This invention relates to an improvement in devices for operating coupling pins, and is especially applicable for use with freight cars, and has for its object to provide a novel construction whereby the operating lever can be easily and quickly removed from or secured to a car whenever desired, and without the necessity of removing the bracket-supporting sockets. The invention consists of an operating rod, spaced socket members permanently secured to the end sill of the car, and rod supporting brackets detachably mounted in the sockets of the said members and having transverse openings therein which provide complete bearings for the said rod, whereby the brackets are carried by the rod upon the removal of said brackets from the socket members.

William Sawyer, Armstrong, B. C., Canada, inventor: Foreman & Armstrong, Armstrong, B. C., Canada, assignee. Two patents. Sash Balancing Devices.—The object of the invention of the first patent is to provide simple means whereby a window sash may be held at any desired point of the window frame, and which will overcome the necessity of providing boxes in which counterbalancing weights may be sustained. The invention may be applied to any window at slight expense, and will not in any way interfere with the free movement of the sash whenever it is desired to adjust the same. It consists of upper and lower guide rollers mounted on the window frame, a series of rollers fitted in the window frame between the said guide rollers, and a cable having both ends secured to the upper corner of the window sash and passing therefrom in opposite directions to the upper and lower guide rollers, the intermediate portion of the cable being wrapped successively around the rollers between the said upper and lower guide rollers.

In the invention of the second patent the window sash is sustained at each side by a cord secured at the ends to the sash and interwoven around pulleys carried by the sash and casing, or either of them, in such manner that the tension of the cords is sufficient to counteract any tendency of the sash to gravitate to the lower position when once raised, so that the sash will maintain any raised position to which it may be moved. It consists of pulleys carried by the movable sash, other pulleys sustained in a fixed relation to the movable sash, and a cord connected at both ends to the movable sash and having the middle portion passed about the pulleys carried by the movable sash, and between such middle portion and the respective ends of the cord passed about the fixedly-sustained pulleys.

Dr. Richard R. Braswell, Shreveport, La. Dental Crown Forming Tool.—This invention relates to a tool in the form of a pair of pliers designed for making crowns, and has for its object to provide an instrument with jaws so designed as to shape the band for the crown, and adapted to receive removable forms, whereby the final shape may be given to the crown. The invention consists of plier jaws having opposed band forming faces respectively concave and convex in matching relation one to the other, and removable crown-shaping forms for the ends of the jaws with matching crown-engaging faces, the relation of the band-forming faces of the jaws and the crown-engaging faces of the forms being such that the matching portions of each are in engagement when the jaws are closed together,

George Wolke, Jacksonville, Ill. Cooling Device for Explosive Engines.—This invention relates to improvements in cooling devices for the cylinders of explosive engines, and the object is to provide a construction that is effective to cool the cylinder. In this invention there is provided a blower or equivalent air forcing apparatus driven by the engine, which is entirely separate and apart from the crank chamber, said blower being connected to a distributing chamber which surrounds the open end of the cylinder and from which the cooling tubes extend, said cooling tubes extending longitudinally along the outside of the cylinder. Thus, it will be seen that cold air will be drawn into the blower and then forced out therefrom directly into the tubes. The invention also includes improvements in the means for attaching the cooling tubes to the cylinder, and also in the construction of said tubes, whereby a large amount of heat radiating surface is provided, and whereby said tubes may be readily inserted and securely held in position in the radiating flanges or ribs provided upon the exterior of the cylinder.

George W. Herrick, St. Marys, Pa. Village Telephone Police Call.—The invention relates to that class of signalling mechanism employed in connection with telephone systems for calling policemen, watchmen, or for other purposes of an analogous nature, and is particularly useful in the smaller towns and villages where few guardians of the peace are on duty during the night. The primary object of the invention is to provide a novel and exceedingly simple system that can be applied at small cost to any established telephone system now ordinarily found in the smaller towns, and is so arranged that the party calling for assistance, or desiring the signal operated, will be put in direct telephonic communication with the party whose aid is desired, while the establishing of such communication automatically effects the operation of the signal or alarm mechanism and will maintain the same in operation until the party called responds thereto.

Edward F. Gardner, Moscow, Pa. Two patents.—The invention of the first patent relates to a pleasure railway, and its object is to provide a railway in which a plurality of inclined portions are arranged in the same vertical plane, so that the pleasure railway will occupy a relatively small amount of ground space. A further object is to provide a pleasure railway having means for enabling cars to travel over a circuitous track without inverting the cars while transferring them from an upper inclined portion of the track to the next lower inclined portion, and to provide means for gently transferring the cars from one incline to another. Means are also provided for maintaining the cars in a horizontal position while they are traveling up an incline leading to the top of the pleasure railway, so that the occupants will not be called upon to assume a dangerous or uncomfortable position during such initial upward movement of the cars.

The invention of the second patent relates to a time-controlled mechanism for dampers, and is particularly designed for automatically operating the dampers of stoves and furnaces, the mechanism being adapted to be operated upon the actuation of the clock alarm, so as to cause the opening of one damper and the closing of the other. The invention consists of a furnace including a draft door, and means for opening and closing the same, a controlling mechanism for the said means comprising a support, a clock mounted on the support and including a winding key, a member releasably engaging said means and arranged to be released by the said winding key, a bearing piece pivotally mounted on the support and having an aperture through which the said member extends for longitudinal adjustment, and a clamping device on the bearing piece for engaging the member for holding the same against longitudinal movement while permitting the member to swing on the bearing piece as a center.

Raymond O. Lewis, Mountainview, Mo. Gate Fastener.—The invention is a fastener for wire fences, and is especially adapted for use on frameless wire fence gates, which are formed at different points on wire fences and are not intended to be opened as frequently as ordinary gates. It consists of a yoke adapted to be secured to a fixed post, a latch member pivotally mounted in said yoke, a ratchet lever pivotally mounted in said latch member, and a bracket adapted to be attached to the movable gate post, said bracket being provided with an aperture to receive said latch member and to be engaged by said lever.

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WANTED—Mail Order. Ladies article suitable for selling through agents. Fisher, 1235 Singer Building. New York City. nov

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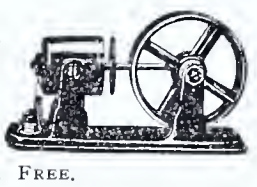
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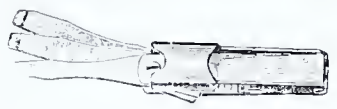


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Established 1889.

Published monthly by

THE INVENTIVE AGE PUBLISHING CO.,

National Union Building, 918 F Street, N. W.,

WASHINGTON, D. C.

THE INVENTIVE AGE is sent, postage prepaid, to any address in the United States, Canada, Mexico, Hawaii, and Porto Rico, for ONE DOLLAR a year; to any other country, postage prepaid, ONE DOLLAR AND TWENTY-FIVE CENTS.

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WASHINGTON, D. C.

Entered at the Post-office as 2nd class matter.

WASHINGTON, D. C., NOVEMBER 1, 1912.

THE TIME REQUIRED TO OBTAIN A PATENT.

The question most often asked and least often answered in patent practice is the one: "How long will it take to obtain my patent?"

It is natural that the inventor should want this information, for he apparently thinks that the allowance of the patent depends simply on the Patent Office reaching the case in its turn—that as soon as the application for patent comes up for examination, it is immediately and finally determined whether or not a patent will be allowed.

Few patents are allowed on the first official action, and no application for patent can be finally rejected on the first consideration, as an opportunity must be given for a reconsideration of the rejection. From a recent report of the condition of applications under examination, at the close of business September 7, 1912, it was developed that on that date two divisions of the Patent Office were examining cases filed early in March: nine divisions were examining cases filed in May: seventeen divisions were examining cases filed in June: while there were only three divisions considering cases filed in August. There were over twenty-two thousand applications awaiting official action, one of the highest numbers ever recorded by the Patent Office.

We have never seen any statistics on the subject, but we believe it is a fair statement to say that scarcely one out of a hundred cases filed is allowed on the first examination. This does not mean that the remaining ninety-nine are rejected. Many of those ninety-nine applications may be objected to because of formal matters: some of them may have only a few claims rejected, while others may have all the claims rejected: but whatever may be the action of the Patent Office—whether the objections are few or many: whether they are serious or trivial—such objections must be cured by amendment before the application for patent will again be considered by the Patent Office. If the attorney or applicant fails to answer the official action within one year from the date thereof, the application will become abandoned.

When, however, a communication is filed by the applicant or his attorney, overcoming or attempting to overcome the objections made by the Patent Office examiner, the application is sent back to the examiner for a second official action. Again it must await its turn, but this time it is classed as an "amended" application. The Rules of Practice specifically state that "applications which have been put into condition for further action by the examiner, shall be entitled to precedence over new applications in the same class of inventions." This provision of the rules, however, is not followed in certain of the divisions of the Patent Office, for we find several divisions in which exactly the reverse is true: to wit, precedence is given to new applications over amended applications. In few divisions of the Patent Office is this rule strictly followed and an amended application given the right of way, so to speak, over new cases.

In one division of the Patent Office they are considering amended applications which were amended in April; in eleven divisions they are considering amended applications amended in June: in twenty-six divisions they are considering amended applications which were amended in July; while there are only five divisions up to August in their amended work. There are two divisions which have over a thousand cases awaiting official action, viz: division 28, internal combustion engines, and division 7, educational devices, clutches, games, toys, mechanical motors, nut and bolt locks, optics and velocipedes.

From the above statement it will be noted that there are only two divisions of the Patent Office which are within a month in their consideration of new applications, the majority of the divisions being from two to four months in arrears in new work. In amended applications there are only five divisions within a month in considering amended cases, the majority of the divisions being from two to three months behind in amended work.

It not infrequently happens that an application must be amended several times. Indeed, we know of an application in which over forty (40) communications passed between the applicant and the Patent Office. It was a case which had been pending in the Patent Office over six years.

With the facts as stated, how is it possible for an attorney—or anyone else for that matter—to predict the time required to obtain a patent in any given case? Suppose the invention were a nut lock, in which the division having the class in charge is considering new applications filed in March, and amended cases amended in June, one could say with reasonable certainty that the first official action might be received any time within five or six months, and that each succesive amendment would be acted upon within two or three months, but he could not say how many amendments would be necessary to meet the objections of the Patent Office, or how rapidly the Patent Office would reach a final conclusion on the application. One would have to be possessed of the abilities of a prophet to be able to peer into the future and determine the objections the examiner is likely to make to the application. and how long would be required to overcome such objections. We have known of applications being allowed within a week after they were filed, but these were rare cases, so rare indeed that it required no tax on the memory to recall them. The average time for obtaining a patent varies with the condition of work in the Patent Office. It is also affected to some extent by the condition of work in the attorney's office. Just now, it takes longer and requires more work to obtain a patent than it ever did before within the experience of the oldest practitioner.

One would suppose from what has been said that the issuance of patents, being surrounded as it is with so much difficulty and delay, was a rare occurrence. The reverse is true. There are between six and seven hundred patents granted each week, and, if one compares the filing dates of the applications with the dates of issue of the patents, it will be found that in the majority of instances it takes from six months to a year to accomplish the desired result. Attorneys may make different statements from this in order to appease their clients, or suit their own ends, but no better criterion of the time required to obtain a patent can be obtained than from a study of the patents recently issued: and from an examination of them, and a comparison between the filing dates of the applications and the issue dates of the patents, we have reached the foregoing conclusion.

Although inventors are subjected to unnecessary and unreasonable delays in the procuring of patents, an efficient remedy lies in their own hands, but it is seldom resorted to. Realizing as they must that after the case is before the Patent Office, delay is certain to occur, there should be no lack of promptness on their part in making application after the completion of their devices: and yet we venture the statement that in many instances weeks and months are allowed to slip by before the matter is submitted to their attorneys, or their papers returned properly executed after the preparation of the application. In pursuing this policy they will assuredly avoid two evils—the postponement of the issuance of the patent grant and perhaps the loss of their rights. It is no uncommon occurrence for an inventor to wait months or even a year before going ahead with the patenting of his invention, and then wax impatient at a few weeks' delay in its allowance.

IGNORANCE OF PATENTEES AS TO THE MERITS OF THEIR INVENTIONS.

It is frequently the case that an inventor makes an invention without fully comprehending either the scientific theory underlying his device, or the benefits and possibilities of the same. A patent is not invalid because the inventor has failed to explain in his specification the scientific theory underlying his invention, or neglected to recite all the advantages and possibilities of his discovery. While it is true that it is necessary for the inventor to make a complete disclosure of his invention, this does not mean that if he fails to recite all the theories, possibilities or advantages of the invention, that his patent will be void. In this connection, two cases recently decided by the courts are worthy of discussion.

In Commercial Acetylene Company vs. Avery Portable Lighting Company, 166 F. R. p. 907, it was decided that:—

"The discovery that acetone used as a solvent for acetylene gas, makes a solution having none of the explosive properties of either substance singly, and which may be safely handled and transported, when embodied in a device for utilizing the same, is patentable."

Acetone is volatile and inflammable, and this vapor when mixed with air is explosive. Acetylene is also highly explosive.

It appears that the patentees Claude and Hess discovered that there was a peculiar affinity of acetone for acetylene, and especially a modifying influence of each upon the other when combined in a supersaturated solution. Prior to the discovery of the patentees, acetylene was a well-known illuminant and its brilliancy was appreciated. The simplicity and cheapness of its production had attracted general attention, but its explosive nature had put a ban upon its use. Every expedient to compress it for the purpose of transportation failed, and, in many instances, had been attended with disaster.

These patentees constructed a closed vessel containing a supersaturated solution of acetylene produced by forcing acetylene into a solvent acetone under pressure, said vessel having an outlet for the acetylene gas which escapes from the solvent when the pressure is released or reduced, and means for controlling the outlet whereby the gas might escape therethrough at substantially uniform pressure. By the invention, the patentees provided a gas tank using acetone as a solvent, which uniformly increased the storage capacity of the tank, rendering it possible to store under moderate pressure three hundred

times as much acetylene gas as could otherwise be compressed therein.

The patentees were not scientists or even chemists, but by patient experiment they learned that acetone under a pressure of 12 atmospheres would absorb acetylene to the extent of 300 times its own bulk; that when combined in solution, this inflammable and explosive substance would tolerate the introduction of a platinum wire heated to a white heat, without explosion; that such mixture would not freeze and was not corrosive: that the two substances were miscible at all temperatures; and that if a small quantity of the solution escaped with the gas, it would not retard combustion. In short the patentees were the first to discover a practical and safe method of storing and transporting these dangerous substances, and this without really understanding or appreciating the scientific principles surrounding their invention.

The court held in this case that it was not necessary for them in their specification to elaborate the scientific theories underlying their invention, and it was simply necessary to point out in their specification how or in what manner their invention could be carried out, and this they did in the specification of their patent so that the skilled mechanic could practice the same.

As bearing upon the proposition that the failure of a patentee to realize all the benefits and possibilities of his invention does not render his patent invalid, the case of the Westmoreland Specialty Company vs. Hogan, 167 F.R. p. 327 is also interesting to note. The invention involved was a dredge for salt and pepper having a celluloid cap, which possessed the advantage over metal caps that it would not oxidize, and of being flexible so as to make a better joint, and the still further advantage that it insulated the salt and prevented it from caking.

It is true that at the time the patent was applied for, the particular process of moisture supply from a metal cap and the insulating capacity of celluloid to stop it, were not stated by the patentee. He knew that metal caps would oxidize and substituted a celluloid cap to prevent oxidation, and it was shown that the stoppage of oxidation resulted in keeping the salt dry; but the mere failure of the patentee to realize the possibilities or advantages of his invention, or the scientific theory underlying the same, and his omitting to recite the advantages, theories, etc. in his patent, did not cast a cloud upon his patent. In concluding its opinion in that case, the court said:

"We are therefore of opinion that the after-recognition of the beneficial fact of the insulating capacity of his celluloid dredge cover should not affect the validity of Hogan's patent."

To keep themselves posted in the progress of the arts in which they are interested, inventors and manufacturers should subscribe for the INVENTIVE AGE, which publishes a list of all patents issued each month. The low subscription price and the character of the publication entitle it to the support of all the inventors of the country.

THE INFLUENCE OF MODERN TRADE CONDITIONS ON THE PROCURING AND SELLING OF PATENTS.

We are prompted to bring this matter up for discussion because of a memorial addressed to the President by the Inventors' Guild, an association of which Thos. A. Edison is a member, and in which the following paragraph appeared:

It is a well-known fact that modern trade combinations tend strongly toward constancy of processes and products, and by their very nature are opposed to new processes and products originated by independent inventors, and hence tend to restrain competition in the development and sale of patents and patent rights, and consequently tend to discourage independent inventive thought, to the great detriment of the nation.

The records of the Patent Office do not indicate that there is any abatement or decrease in the number of patents issued. Necessity is and always will be the mother of invention, and, while the necessity exists, inventions will be made and patents procured. The poor inventor will continue to invest his savings in a patent on some invention in the hope or expectation of a reward for his labor and genius. Even though there are failures all around him, and he knows that his friend or neighbor has taken out a patent and has not sold it, nevertheless, on the chance that his venture may result differently, he is willing to spend his money in procuring a patent on his invention. With the natural increase of the population of the country, it stands to reason that there will not be any dimunition in the number of patents procured: though it is a fact that the increase in the number of patents is not proportionate with the increase in the population, and it is probably fortunate that this is true. Although the grant of patents has not increased to any extent that is noticeable, it is a deplorable fact that the development and sale of patents is attended with more difficulty than it was twenty or thirty years ago. The reason for this is not hard to find.

Take the typewriter industry as an example. There is a typewriter trust just as there are trusts in other lines. The typewriter trust has its own patent department: and its own skilled mechanics whose minds are concentrated on improving the machine. This patent department has a corps of patent solicitors whose work is confined to procuring the patents for the trust. The experts connected with the typewriter companies work along certain well defined lines for the purpose of developing improvements which are in harmony with the present plan of the machine. The typewriter companies are usually opposed to any innovations, preferring to manufacture the old machine with slight changes from year to year, rather than take up improvements which would necessitate a radical departure from existing methods. Having their own mechanics and experimental shops, and their own patent attorneys, it is natural that they should discourage independent inventive thought, and it is extremely difficult for an inventor on the outside, or one who is not connected with a typewriter company, to have adopted some invention which he may have devised for the improvement of a certain machine.

Some years ago, an inventor made a very clever improvement in folding covers for typewriters. It was a collapsible structure, and could be opened by the mere pressure of a button. When set up about the machine, it made a complete protection for it, and prevented the slightest ingress of dust. A company was formed and considerable money was spent in attempting to get the invention introduced through the different typewriter companies, but absolutely no progress could be made. The typewriter companies had at that time their own cheap metallic covers which were of absolutely no use: were always in the way, and furnished no protection to the machine. They did not want a perfect cover, but they simply wanted something in the nature of a cover that they could sell to the customer, and they did not care whether it was a good cover or a bad one. Indeed it seemed that a good cover was something that they did not want, because the machine would not then need repair so quickly. We happen to know that in this particular instance the inventor and those associated with him spent over twenty thousand dollars in trying to exploit the invention, and finally the company had to go into liquidation.

As another instance, take the electrical combination. It is known that a certain company practically dominates the electrical industry. It has its own patent department—a corps of over a dozen attorneys constituting that department: not to speak of its experimental shops, mechanical experts, machinists, etc. All the inventions or improvements originated in its shops by any of its employees, are submitted to the patent department for the purpose of determining whether or not a patent application should be made thereon. If an application for patent is recommended, then the patent department of the company presents the application and conducts the prosecution of the same. Naturally, as the procuring of a patent costs nothing but the government fees, for the company already has draftsmen and attorneys to prepare the drawings and the specifications and prosecute the applications—this Electric Company applies for and secures a large number of patents each year. During the year 1911 over a hundred and fifty patents were issued to that company. If the improvement made by their employee contains any patentable invention of merit, they apply for a patent thereon. Because of the expense to which it is put in the employment of its own mechanical experts, designers, etc. the company discourages independent inventive thought, and rarely gives attention to the plans and improvements made by those on the outside. It is indeed an unusual occurrence for an inventor not connected with the electric company to find a sale for his patent with that company.

What has been said with respect to typewriters and electrical inventions, applies throughout the mechanical arts. In the shoe machinery line, a shoe machinery company of Boston dominates that industry to such an extent that if they do not want a patent on an improvement in shoe machinery, or cannot get it at their own price, the inventor is without recourse and cannot find a purchaser elsewhere. When there were a dozen different independent companies in the same line of invention, a patentee, if he could not find a customer in one company, could approach another concern, and very often he could get the different companies to bid against each other, and in this way he would succeed in obtaining the real value of his invention in the sale of his patent: but competition no longer exists in the majority of the classes of invention. An inventor must sell his patent to the trust at their price, if they want it at all, or he is given the sweet privilege of holding his patent for the rest of its term. As a rule, however, the large combinations prefer to adhere to their ordinary processes and products and are not particularly anxious to introduce new methods and articles because that means a change in their machinery and, possibly, a modification of their methods of selling. If, however, a patent should be issued which some corporation is desirous of obtaining, it usually bides its time and lets the inventor find out for himself how difficult it is to sell his patent, before approaching him on the subject of purchasing it. By that time, the inventor is willing to "be reasonable" from its viewpoint and to accept as recompense for his labor and genius about the amount of money that he has expended in procuring the patent.

It is too much to hope for the entire restoration of the old competitive conditions that prevailed thirty years ago, but it is devoutly to be wished that some modification of present conditions may be brought about so as to make it easier for inventors to sell their patents, and make them independent of the large trust organizations.

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Anchor, Folding.....S. F. Langford
Animal catcher.....
.....G. D. McDonald et al.
Athletic putting shot.....M. C. Murphy
Auger, Well.....M. D. Harris
Automobile cooler.....
.....R. L. Glass et al.
Automobile gearing lock.....J. H. Bull
Automobile horn.....W. E. Stephens
Axle leveling device.....T. J. Baldwin
Bag jaw.....L. B. Prahar
Ball player, Manikin.....G. B. Stone
Band brake.....C F. Smith
Bank.....M. G. Standley
Base lock for horizontal sectional units.... E. G. Sampson
Base lock for horizoutal sectional uuits.... R. G. Bullock
Basket support.....E. L. Fackler
Battery ventilating and cooling system.... C. H. Bedell et al.
Bearing Thrust.....E. Kreher
Bed, Couch.....C. H. Young
Bed couch.....F. L. Andren
Beer cooler.....F. Turek
Belt hook.....N. Heger
Belt shifter.....R. Milne
Belt shifter.....W. Dittmeyer
Belt shifter.....L. T. Hagan
Belt stretcher.....R. L. Sutherland
Billiard table.....W. F. Lawrenz
Blast furnace.....A. J. Moxham
Blasting implement.....
.....N. Ruschel et al.
Blinds, Locking device for the controlling cords of window.....J. A. Hedberg
Bobbin grip F. H. Stetson et al.
Boiler furnace.....C. A. Midgley
Boiler safety device.....R. J. Hogan
Boiler stand, Range.....C. L. Holden
Boilers, Device for collecting sediment in steam.....E. P. Hewitt
Bolster block.....J. N. Nuckalls
Book construction, Loose leaf....E. W. Hill
Bring and well-driving apparatus, Hydranlic A. N. Spooner
Boring machine, Bobbin.....L. C. Baldwin
Boron compounds, Reduction of..F. J. Tone
Bottle filler.....H. O. Fisher
Bottle neck finishing machine..J. C. McKim
Bottle, Non-refillable.....J. Pielig
Bottle, Non-refillable.....
.....F. Smith et al.
Bottle, Non-refillable.....L. Arnavat
Bottle-stopper for automatically measnring and delivering liquid.....T. R. Togna
Box covering machines, Box form attaching means for.....H. De Smith et al.
Bracelet joint.....R. C. Castiglioni
Bracket clamp.....H. F. Keil
Brake beam (2 pats.).....H. Ziemss, Jr.
Brake beam.....W. S. Atwood
Broiler attachment for ranges and other heaters.....S. Reina
Broom corn booter.....B. Titus
Building material.....C. S. Bird
Cabinet, Aseptic kitchen.....H. E. Bown
Cable clamp.....W. H. Hargrave
Cables through pipe-lines, Device for passing O. B. Mueller
Cake coating machine.....P. D. Harton
Cake icing or coating machine.P. D. Harton
Calcium carbid, Subdividing crystalliue..
.....J. M. Morehead et al.
Camera film attachment.....A. M. Vale
Camera, Folding.....A. L. Adams
Can forming and trimming machine.....
.....D. Malde
Can opener, Safety.....E. D. Smith
Candlestick lubricator.....E. L. Faul
Car brake.....J. Thenser
Car coupling.....R. B. H. Leighton et al.
Car dor lock, Coneealed.....C. L. Perry
Car mover.....E. W. Hover et al.
Car, Railway (2 pats.).....N. G. Vosler
Car rerailing frog.....C. B. Gambill
Car nnderframe.....W. P. Bettendorf
Cars, Means for cushioniug the bodies of railway.....W. P. Bettendorf
Carbou black, Apparatus for prodncing.... J. A. Snee
Carbon black, Producing.....J. A. Snee
Carbureter.....L. Anderson
Carbureter.....H. A. Miller
Cards, Game.....W. T. Trusty
Cartons, Machine for closing and sealing the tops of filled.....J. H. Witt
Case hardening compound.....
.....P. W. Brennan et al.
Casing.....G. E. Palmer
Casing, Beudable inclosing.....
.....A. E. Woodhouse
Casting machine.....J. W. Furlow
Ceutrifugal screen.....H. Parker
Centrifngal separator.....C. McLeod
Cereal grains and a product thereby obtained, Treating.....A. P. Anderson
Cereal grains, Treating and drying.....
.....A. P. Anderson
Cereals, Machine for treating weeviled.... E. W. Hooker
Chair arm.....J. A. and J. P. Barker
Check controlled apparatns, Repeating mechanism for.....F. C. Kainer
Cherry extract and making same.....
.....E. G. Ressenconrt
Chinaware for baking, Packing.....
.....J. Pass et al.
Chute, Hog.....J. Rada
Chute retarding device.....H. S. Gardner
Circuit conductors, Connection device for.. T. E. Mnrray
Clamp.....U. S .G. Gatten et al.
Clamp.....J. Van Denbnrg
Cleaning apparatus.....E. C. Stafford
Cleaning various materials, Apparatus for A. Henning.
Clinker bar aud fire rake, Combination.... A. W. Woodley
Clock.....I. Greenwald
Cloth laying and piling apparatus.....
.....C. C. Sehneider
Clothes wringer.....J. C. Thompson
Clutch, Friction.....N. A. Christensen
Cock, Interchangeable self-closing and compression.....A. C. Schnermann
Coiu and ticket delivery machine and eash register.....A. K. Cross
Collar and tie retainer.....C. A. Barnes
Column for the drying of liqnids, pasty materials, or solid matter.....
.....G. P. Guignard et al.
Compass.....E. N. Kraemer
Concrete construction, Reinforeed (2 pats.) J. Wnnder
Concrete construction, Reinforced.....
.....C. A. P. Turner
Concrete flume.....S. L. Stovall
Concrete form clamp...A. H. Symons et al.
Concrete in forms, Device for placing.... L. C. Brink
Concrete mold.....C. H. F. Dyhrkopp
Concrete outer coffin.....B. R. Rnekstool
Concrete railway tie.....A. Stark
Condenser, Barometric....R. D. Tomlinson
Cooling and refrigeration apparatus.....
.....O. Knphal
Copying iron.....F. H. Tongue
Cotton pieker.....H. Skaer
Counters or the like, Attachment for.....
.....F. W. Sterling
Crane, Street lighting.....F. E. Wilkinson
Crushing machine roll.....W. A. Box
Culinary machine (2 pats.).....H. F. Hall
Cultivator.....W. J. Daniel
Curtain fixture.....J. L. Regne
Curtain fixture.....E. E. Whitmore
Curtain pole.....F. Zeller
Curtain pole.....C. J. Casbourne
Curtain rod.....W. B. Miller
Cnshioning device....A. F. Rockwell et al.
Cyanid solutions, Precipitating apparatns for.....D. Bosqui
Cycle Motor.....M. W. Stuart
Dental apparatus.....F. E. Buck
Dental work, Protecting.....A. R. De Pass
Detergents, Manufacture of.....
.....W. R. Ormandy et al.
Die stock.....J. A. Phelps
Dies and metal working machines, Cooling and lubricating apparatus for..F. C. Arey
Display rack.....R. J. and F. Wright
Display receptacle, Reinforced.J. C. Skinner
Distillation.....S. Neal
Door check.....C. B. Harkness
Door lock.....J. Sehmittberger
Door lock, Sliding.....J. Sehmittberger
Door or gate hook.....C. Scott
Doubling and twisting machinery, Means for wetting yarns for use in.J. D. Whyte
Dongh, Facilitating the fermentation of... D. J. Hanna
Dowel.....H. Harrild
Draft apparatus.....J. K. and A. O. Miller
Draft eqnalizer.....S. L. Meek
Draft eqnalizer.....L. T. Scovel
Draft gear.....C. J. Nash
Drying rack.....F. J. Balder et al.
Drying room.....E. E. Perkins
Drinking-fountain.....A. Whittier
Driving mcehanism for machines and vehicles.....F. Kleinvogel

Drum, Tanning....C. Haas
Eggs, cream, batter, &c., Beater for beating and aerating....E. P. Sperry
Electric ignition gear, Distributer for....F. R. Simms
Electric light, Portable....C. Hubert
Elcetric lights, Combined soeket and switch for....D. A. Bailey
Electric lighting fixture, Outdoor....R. B. Benjamin
Electric pull socket switch..W. Pfeifer, Jr.
Electric snap switch....T. M. Smith
Electric switch....F. Kuhn et al.
Electric switch, Distant eoutrol....C. C. Badeau
Electrical eonduit conuctor..A. McMurtric
Electrical distributing cabinet....A. E. Blackman
Eleetrical receptable, Weatherproof....F. J. Russell
Electrical resistance....J. A. Mislaud
Emery wheel dresser....P. W. Lamson
End gate....H. A. Becker
End gate, Wagon....R. G. Ping
Engine started, Explosive...C. H. Freeman
Engines, Pump feeding mechanism for internal combustion..L. H. L. Bellem et al.
Engines, Radial pitman for multiple cylinder....C. B. Redrup
Engraving machine...T. G. and L. Z. Cordi
Evaporators, Removing salt from....S. M. Lillie
Exercising apparatus (marking device)....M. B. Reach
Explosive charge aud explosive body for projectiles, mines and torpedoes....C. E. Bichel
Explosive engine....W. P. Pembroke
Explosive or internal combustion engine....A. B. Casper
Eyeglass mounting (2 pats.)....W. R. Uhlemann
Eyeglass nose grip....W. R. Uhlemann
Eyeglass nose gnard....F. A. Stevens
Eyeglasses and spectacles....G. H. Day
Fabrics and spun goods, Finishing, filling, loading or dressiug textile..L. Lilienfeld
Farc register, Cab....J. A. Keyes
Farm gate....C. J. Lauc
Faucet....F. W. Calvert
Faueet....T. W. Burt
Faucet hose connection....C. H. Shepard
Faucet or bib cock, Quiek aetion....P. Nusser
Feeder, Steam boiler....J. H. Alfredson
Feeding device attachment....R. L. Wilcox
Fence builder, Wire....W. S. Hazelton
Fence fabric....R. C. Hess
Fence post....P. K. Bushnell
Fertilizer mixer....A. B. Pickett
Fiber, Decorating....H. P. Taber
Fibrous materials, Classifier for....R. M. Evans
Filaments for electric incandesceut lamps, Manufacture of exeeedingly thin metallic glowing....A. Lederer
File compressor....E. Ohnstrand
Filter....W. H. McMurtry
Filters and the like, Means for controlling the diseharge of liqnid from....W. Paterson
Filter pulp washing machine....K. Kiefer
Filtering machine, Vacnum....C. K. Barnes
Finger cot, Flexible metallic..J. N. Skaggs
Fire extinguishing compound, Making a....E. M. Davidson
Fishing tackle....H. M. Tileston
Flagpole attaehment....B. L. Mink
Flagstaff....A. B. Updike
Flanges on bodies of ductile metal, Forming integral....T. E. Murray
Flue base, Smoke....W. A. Deck
Fluid heating means....C. E. Molesworth
Fluid pressure device....G. Westinghouse
Flush, Railway toilet....H. T. Crouk
Fly and mosquito destroyer..J. T. Plumer
Fly trapping device....G. Barr
Flying machine....W. B. Clements
Flying machine....J. A. Blondin
Flying machine....C. V. Johnson
Flying machine....J. Maljkovich
Fodder purifying and preparing machine....K. Finkenzeller
Forging press centering device...W. Ferrier
Fork attachment for removing food or other material impaled thereon..A. H. Edwards
Fountain....H. Strumpf
Fruit grader....E. N. Maull
Funnel....J. J. Lacy et al.
Furnace charging mechanism...J. B. Ladd
Furnace construction, Blast....J. Scott
Furnace regulating and reversiug apparatus, Regenerating gas....H. Kopper
Furniture, Postoffice....M. S. Field
Furrow opener, Disk..S. H. Jones et al.
Fnse, Electric....T. E. Murray
Game....A. H. Brown
Garment support....H. C. Wilson
Gas and smoke consumer....J. Harmon
Gas cleaner....P. Meehan
Gas generator, Acetyleue....W. E. Waltz
Gas meter connection....M. A. Corbett
Gas meter, Prepayment....H. A. Smith
Gas meters, Bellows for dry....G. Heeley
Gas mixer and regulator....G. W. McKee
Gas reactions and apparatus therefor, Prodncing endothermic....H. Grohmann
Gas reactions, Effecting exothermic....G. Eschellmann et al.
Gases, Removal of carbon disulfid from....E. Knoevenagel
Gate....F. Derosier
Gate fastener....T. Wadleigh
Gear cutting machine....L. W. Penney
Gear wheels, Cutting helical....F. L. Eberhardt et al.
Gearing, Friction....J. A. McLaughlin
Gearing shield....H. Budd
Glass gathering furnace (2 pats.)....H. L. Dixon et al.
Go cart, Collapsible....O. Knrz
Grain sorting and cleaning apparatus....H. Seck
Grain, Treating....E. W. Hooker
Grinding machine adjusting device, Rotary....A. Wagner
Grating....J. Watson
Guu barrels, Composition of matter used for eleaning....O. Tromsness
Guns, Means for preveuting the erosion of....A. A. Ackerman
Halogens, Making....C. W. Jones et al.
Hammer, Trip....J. L. Kelley
Hammock....A. T. Hallock
Hams, Preserviug (2 pats.)....P. Joru
Harvesting machiue....N. P. Djunkopky
Hat piu, Adjustable and safety....C. Fortesque
Hat, Ventilated....A. H. Revell
Hay loader....D. C. Crook
Headlight, Dirigible....A. Roesgen
Hitch, Humaue....J. G. Fischer et al.
Hook and ear....E. Oppenheim
Horn or whistle....J. B. Rogers
Horse hoes, Riddiug attachment for....C. E. Libby
Horseshoe....J. P. Kiefer
Hose elamp....A. L. P. Perry
Hose compliug....C. C. Schultz
Hose supporting device....W. Humbaugh
Hotel register....J. W. Thompson
Hub for vehicle wheels, Resilient antifriction....C. G. Capwell
Igniter terminal....R. M. Phillips
Illuminating device....W. H. Pease
Illuminating indicator....A. Junghans
Impulse transmitter....C. R. Austin
Incandesceut lights, Diffusing container for....P. C. Hewitt
Incubator....H. W. Luhmaun
Incubator....J. G. Congreve
Ingot mold....J. Power
Ingots, Solidifying....J. E. York
Iuhaler....O. E. Eklund et al.
Insect trap....J. H. Scroggiu
Insole smoothing implement for shoes....H. E. Maiue
Instep arch support....C. N. Childs
Interual eombustion engine..J. R. Pearson
Internal combustion engine..H. McCornack
Iron albuminous compounds, Making....F. Zuckmayer
Iron arm and knob....F. Browalski
Iron ore, Treated....E. F. Goltra
Ironing machine....L. R. Helm
Ironing table and washbench..W. R. Padley
Jack....W. E. Quiun
Jewelry setting....M. L. Robbins
Journal bearing....W. E. Callane
Kinetoscope....O. P. M. Davis
Labeling machine....P. S. Smith
Lacing hook inserting machine....F. W. Luscomb
Ladder and ironing board, Combiued step..C. O. Orwig
Lag....H. H. Boyer
Lamp....T. H. Lange
Lamp, Convertible vapor....L. K. Flanagau
Lamp shade suspension device....H. M. Daggett
Lamp suspension, Gas....J. and G. Keith
Lantern globe lifter....J. H. Hill
Lantern, Signal....C. A. Thompson et al.
Lasting machine, Boot aud shoe....R. Raab
Latch and lock for screen doors, &c., Combined....T. J. aud J. D. Hart
Lath supporting device....J. B. Johnson
Lathe....N. D. Chard
Lathe dog....J. Lenz
Laundry machine driving mechauism....P. T. Coffield
Lavatory fixture....W. A. Speakman
Leather, Making firm, almost entirely waterproof, non-slipping....F. Kornacher
Leather staking machine....E. J. F. Quirin
Level....A. Svenneby
Level, Plumb....R. L. Brooks
Life saving apparatus for submariues....M. Reyngoudt
Lifting device....G. Humphrey
Lifting jack....F. E. Farnham
Loading and unloading coal and other cargo, Apparatus for....G. E. Holland
Loek....B. Roller
Lock....G. N. Mason
Lock....J. Sinkovich
Locophoue....F. Della Torre
Loom harness....B. McAneany
Loom shuttle motion....J. A. Gendrou
Lorgnette....G. A. Briggs
Lubricating emulsion....E. A. Emery
Lubricator....H. Gibbs
Lyes, Purifying waste mercerization....P. Krais
Machine attachment....H. J. Haegen
Mail crane....J. M. Hough
Match box....G. F. Dunn
Material handling mechanism..C. A. Frayer
Mechanical movement....R. L. Wilcox
Mechanic's furnace....P. R. Flamm
Metal cutting-off device, &c., (Reissue)....G. Gorton et al.
Meral cutting tools, Chip controlling means for....J. Hartness
Metal turning machines, Work holder for..J. Hartness
Metal turning tool....J. Hartness
Metal turning tools, Chip-controller for...J. Hartness
Meral working machines, Stop mechanism for....J. Hartness
Metallurgical furuace (2 pats.)....F. B. Lamb
Meter eonnections, Protecting device for...P. H. Bartlett
Meter testing eonnection block....T. E. Murray
Milking machine....O. C. Sibilsky
Mills, Operating hot....S. A. Davis
Mining sluice....P. Bourey
Mixer....R. M. Temple
Mixing vessel....H. W. Jordan
Moistening and affixing deviee, Stamp....H. W. Beaver
Mortising, drilliug and the like machinery, Device for guarding....J. G. Austin
Mouth gag....E. T. Krebs
Mowing machine....O. Putzke
Music roll spool....G. H. Davis
Necktie fastener....J. A. Soderstrom
Nose bag....J. W. Moir
Nurling machine....J. E. Johnson
Nut and bolt lock....P. Bruner
Nut and candy depositor....O. Brunka
Nut lock....M. F. Paue
Nut lock....P. Bubauy
Oar or the like joiut....J. W. Griffinberg
Office indicator, Electrical....J. C. Gabel
Oil....E. Roche
Oil burner....W. J. Vondracek et al.
Orchards, gardens, &c., Protective apparatus for....G. A. Lowry
Ore concentrator....G. M. Gross
Ore concentrator, Dry....A. H. Kiduey
Ore mill, Gyratory....G. H. Bradford
Ore separating apparatus...H. Dallemague
Packing for testing machines....T. Olsen
Packing honses, Carcass-shifting apparatus for....P. S. Meister
Packiug, Metallic....P. Conniff
Packing, Steam joint....E. B. Tree
Paint, Hydraulic cement aud water....W. P. D. Moross
Patty shells, Making....W. Gategast
Peat drying apparatus....A. S. Cairncross
Peu, Fountaiu....G. Reutz
Peuta and hexa-chlorethanes, Making....H. Harberland et al.
Perambulator....J. P. Holman
Percolator, Coffee....J. E. Kiug
Phonie apparatus....D. Higham
Phonograph....F. D. Lewis
Phouograph....O. Arnold
Phonograph....L. A. Brown
Phonograph record....J. W. Aylsworth
Phonograph reprodneer....A. N. Piermau
Phonograph reproducer....H. H. Dyke
Phonograph speed regulator....E. L. Aiken
Phonographs and other machines, Feeding mechauism for....C. N. Wurth
Phonographic apparatus....T. A. Edison
Photo printing apparatus....J. Campeau
Photo priuting machine, Automatic....A. J. Freeman
Photographie apparatus....C. C. Lamb
Piano, Self playing....J. Bauer
Picture apparatus, Moving....J. Bottlander et al.
Pictures during production, Apparatus for projectiug....H. Mayer
Pins, Machine for feeding and driving....W. F. Frazer
Pipe coupling, Traiu....C. Plopa et al.
Pipe grabber....E. E. Greenley
Pipe lines, Device for passing eables through....B. B. Hodgmau
Pipe threading and reamiug device....C. A. Anderson
Pipes, Bnr remover for....H. T. Merriam
Piston ring testing deviee..D. J. Campbell
Plane, Rotatable..R. D. aud B. L. Wheeler
Planter, Seed....W. M. Adams
Plaster board, Making....G. R. King
Plaster board, Haking....G. R. King
Plow....R. B. Fry
Plow....W. H. Williams
Plow, Disk....A. Olson
Pnenmatie cleaning systems, Valve connection for....C. R. Thurman
Pocket, Stake....L. D. Gregg
Pocket, Trousers....I. Abrahams
Power for industrial purposes, System of developing natural....M. W. Marsden
Power generator, Gaseous....G. Matricardi
Power transmission....S. Hughes
Power transmissiou mechanism, Friction...N. G. Robinson
Power transmission, Pneumatic....F. M. Prather
Primary battery....A. L. Saltzman
Print drier....E. S. Krantz et al.
Printing press ink roll....H. P. Elliott
Printing press ink roll....S. Elliott
Printing press iuking mechanism....S. Elliott
Projectiou apparatus, Slide carrier for....E. W. Goodrieh
Propeller, Automatic....R. E. Kellogg
Pulley blocks....A. Welin
Pulp screening maehine (2 pats.)....O. Wandel
Pump (2 pats.)....F. I. Getty
Pnmp....W. Winterhoff
Pump, Air lift....W. B. Moore
Pump, Air lift....F. S. Miller
Pump for locomotive engiues, Auxiliary air....G. A. Bosworth
Pumping, Auxiliary power for..W. T. Pierce
Rail anchor....B. B. Betts
Rail, Guard....A. Morrison
Rail joint....M. Chulick
Rail joint....R. S. Gray et al.
Rails, Apparatus for working on the upper or wearing portions of compound tram (Reissne)....J. Noll
Railway cattle guard....G. T. Senn
Railway signaling mechanism..J. D. Taylor
Railway tie....G. Naylor
Railway tie, Metallic..M. J. Francis et al.
Receptacle cover or closure....A. P. Anderson
Receptacles, Coveriug....I. Hirsohn
Records, Apparatus for obtaining double..D. Higham
Reel conuection....J. E. Anderson
Refrigerator drip pan..S. Brucelarie et al.
Rerailing device....A. E. Haucock
Resilient wheel....M. C. Rose
Rock drill....W. L. Brookins
Rolling mill, Tube....A. A. K. Nowak
Roof gutter, Sectional molded wood....H. E. Gallagher
Rope clamp....C. A. Mechling et al.
Rope makiug machine....C. M. Kiugman
Rubber fabric, Coated metal wire....R. M. Bissell
Sack holder....C. J. Hall
Sad iron, Self heating....J. T. Harrison
Safety clamp for drill rods, &e....C. Wommer
Salt and pepper container, Combined....J. H. Leiuer
Salts and manufacture of same, Halogenphenolalkali....P. Fleming
Sand, Apparatus for prepariug old aud new moldiug....G. Hoffmann
Sanitary seat....S. A. Girouard
Sash lock....J. Schmittberger
Sash lock, Windo[illegible]....J. Mann
Sausage casing....S. Ma[illegible]
Sausage casings, Makiug....S. Ma[illegible]
Sausage stuffer....J. O. Bu[illegible]
Saw filing machin[illegible]....J. Upthegraft
Saw set....C. H. De[illegible]mont
Screen frame bracket, C[illegible] building....C. J. Brown
Screw driver....L. A. Tibbals
Sealing machiue....W. C. Powell
Separator....T. Willma
Sewage diverting gate....E. L. Wagner
Sewing machine....W. Arbetter
Sewing machine buttonhole attachm[illegible]....E. J. Bo[illegible] et al.
Shade and curtain pole supporting bracket, Window....H. B. Nylund
Shade roller aud curtain pole bracket, Combined....L. O. Garraway
Shafting, Flexible....J. R. Plank
Shafts, Locking device for the gates of....G. W. Minto et al.
Shears aud sheet metal brake, Combined....A. O. Slentz
Sheave....J. L. Cypher
Sheet metal box....J. H. Lippke et al.
Sheet registering mechanism....J. White
Shingle machiue....J. B. Nelson
Ship cleaner....G. W. Ramer
Shoes, Making stitch dowu....F. T. Tappan
Sidewalk constructiou, Cement..D. J. Cable
Sifter, Ash....L. Libbman
Signaling apparatus, Selective....D. W. Kneisly
Signaling system, Electric....J. D. Taylor
Sled....F. Hornquist
Sleeper, Ferroconcrete....A. Henry
Slide rest....G. R. Kaesmarik
Small arms, Ejecting mechanism for drop-down....W. Baker
Smoke consnmer....C. E. Patrick
Soap holder....B. M. Dawson
Soles and the like, Apparatus for tempering and flexing....G. Basler
Sound and shock absorber....J. B. Ogden
Sound records, Mauufactnring....J. W. Aylsworth
Speetacles....J. C. Wells
Speed chauging mechanism....L. R. and L. Bleitz
Speed variator....C. M. Couradson
Spiuning device....G. Bettini
Spoke socket....L. A. Bradford
Spout for disk attachments..T. Brennan, Jr.
Spraying compound mixer..N. J. Wigginton
Spriug fork for wheeled vehicles....C. R. and H. M. Kittle
Spring wheel....B. P. Hanson
Stage device....J. B. Fitzpatrick
Starch and produet, Treating....A. P. Anderson
Starch and starch materials and product, Treatiug....A. P. Anderson
Starch eontaining flours, Puffing....A. P. Anderson
Starch containing material, Apparatns for puffing....A. P. Anderson
Starch materials, Apparatus for the treatment of....A. P. Anderson
Starch materials, flours, and flour product, Treating....A. P. Anderson
Starch materials, Treating..A. P. Anderson
Starch pebbles, Making....A. P. Anderson
Starch pellets, pebbles, or nodules and making same....A. P. Anderson
Starch, Treatiug....A. P. Anderson
Starch, Treating and dryiug..A. P. Anderson
Station indieator....W. H. Ridgway
Stay, Garment....C. A. Maguire
Steel and other metals, Compound for hardening....P. W. Brennan et al.
Steel, Making....F. B. Lamb
Steel plate and like article, Hardened....H. A. Richardson
Steering apparatus, Fluid pressure....E. E. Bryant
Stocking....E. W. Decker
Storage battery....T. A. Edison
Stove....M. Cullen
Stove attachment....L. B. Transue
Strainer, Milk....F. O. P. Shutt et al.
Superheater boiler....J. E. Bell
Surveying instrument....E. R. Graves
Suspension rack....F. E. Norwood
Switch....A. V. A. McHarg
Switch and cut-out device..A. V. A. McHarg
Switch lock, Automobile safety....F. C. Andersou
Switch lock for ignitiou circuits....P. Hoffman et al.
Switchboard and rheostat....E. M. Crane
Syringe adapted to use liquids under pressure....C. J. Kintner
Tables, Meaus for fastening cloth to game....A. F. Hjort
Tack pulling machine....W. B. Keighley
Talking machine....L. Lumiere
Talking machine amplifier....J. M. Evans
Talking machine attachment...P. J. Henry
Tamping machine....O. Nolan
Taper turning mechanism....J. Hartness
Telegraph key....G. V. Buqnoi
Telegraphic stations, Protective apparatus for radio....E. Girardeau
Telegraphy and signaling, Apparatus for submarine....E. Klupathy et al.
Temperature regulator, Automatic....H. Hohlmann, Jr.
Thermometer for stills, Recordiug and indicating....R. Dunwody
Thermometer for turpentiue stills....R. Duuwody
Ticket, Railway....F. Oppenheimer
Tie and rail fastener....T. Carr
Tiles, &c., Machine for eoating....F. E. Goldsmith
Tire....E. Siegel et al.
Tire for the wheels of vehicles, Elastic....F. E. Blaisdell
Tire holder....A. M. Sonnichsen
Tire, Pneumatic....J. H. Clune
Tire, Pneumatic....B. B. Hill
Tire protector, Pneumatic rubber....J. F. Johnson
Tire, Rubber....J. J. Beitler
Tire, Vehicle....J. G. Funk

Tire, Vehicle....C. W. Blaney
Tires of vehicles, Mass for filling....R. Zimpel
Tool, Combination....J. C. Henderson
Tooth backings, Tool for fastening metal....G. O. Burlew
Toothpick machine....W. H. Parker
Torch....H. H. Nichols
Torpedo, Automobile....G. C. Davison
Torpedoes, Apparatus for generating motive fluid for automobile....G. C. Davison
Torpedoes, Motive fluid generating apparatus for automobile....G. C. Davison
Tracker board....H. K. Sandell
Traction engine....H. Ford
Transformer, Series....G. A. Burnham
Trap....A. Dixon
Trolley....G. E. Lynch
Trolley....N. B. Coon
Trolley....E. Y. Moore
Trolley pole....W. L. Wright
Trolley pole construction....A. K. McQuade
Trolley splice....E. Heydon
Trolley supporting mechanism....D. T. Fisher
Trough, flume, conduit, &c....K. J. Thorsby
Truck and brake for cable railways....W. H. Colburn
Truck, Binder....A. Burger
Truck construction, Monorail trolley....G. A. True
Truck, Piano....A. T. Raynor
Tube protector, Inflating....C. E. Falor
Turbine casing....O. F. Bruman
Turbine steam chamber....O. F. Bruman
Turbines, Stationary diaphragm for steam....O. F. Bruman
Typewriter....J. A. Whitcomb
Typewriting machine....J. Waldheim
Umbrella....C. A. Parker
Umbrella, Foldable....E. E. Hauson
Umbrella handle....G. Testa
Underreamer....C. E. Frederickson
Vacuum cleaners, Tool for....L. Bradt
Vacuum producer....H. A. Jeffery
Valve....C. Wainwright
Valve....P. R. Flamm
Valve....C. Nichol
Valve, Automatic high-pressure reducing....J. C. Hooper
Valve, Double acting steam....W. Langer
Valve, Flush....A. N. Pasman
Valve for carbureters, Air....L. Anderson
Valve for vacuum tubes, Gas feed....D. M. Moore
Valve gear for locomotive engines....A. D. Baker
Valve gear for locomotives, Reversible variable cut-off....A. D. Baker
Valve gear, Reversible variable cut-off....A. D. Baker
Valve grinding machine, Portable....O. A. Olson
Valve, Pop-up waste....W. J. Bergens
Valve seat facing machine....T. B. Williams
Valve spring releaser and retainer....E. N. Kraemer
Valve trap, Automatic expanson....F. W. Reiss
Valves, Mechanism for operating gas meter....E. A. Reeves
Vapor burner....W. M. Shepherd
Varnishing machine....F. J. Balder et al.
Vault, Burial....A. J. Merkelbach
Vehicle controlling device, Motor....F. P. Nehrbas et al.
Vehicle, Dumping....J. Jaunkaytis
Vehicle, Motor....A. W. Wall
Vehicle reach....L. E. Yoakim
Vehicle running gear....O. Kraemer
Vehicle shield....G. L. Smith
Vehicle shock absorber....C. T. Schoen
Vehicle spring....G. M. Hnston
Vehicle, Three wheeled motor driven....W. H. Williams
Vehicle top brace....T. Teppert
Veneer panel, Metal reinforced....E. Tyden
Ventilator....R. T. Senter et al.
Vise, Bench....C. E. Shields
Voting machine....J. H. Dean
Voting machines, Primary election lock-out for....W. J. Lausterer
Wagin brake....J. T. Rogers
Waist....R. Goldberg
Waiter calling device....W. H. McManus
Wallet (2 pats.)....J. R. Cardwell
Washbasin fixture....W. A. Speakman
Water elevating apparatus....N. H. Freeman
Water elevator and brake mechanism, Windlass....A. A. Hatcher
Water gage....R. A. Manger
Water purifier....W. A. Freise et al.
Water wheel....D. B. Replogle
Weed hook....P. H. Chase
Weeder....J. C. Lindsey
Welding Machine for and method of electric....E. I. Heinsohn et al.
Well packer, Deep....D. W. Black
Well rigs, Sand reel for oil....R. H. Machin
Wheel....M. C. Rose
Wheel guard, Automatic....C. E. Gierding
Wheel retaining means....T. G. Rice
Wind motor, Horizontal....H. S. Banks
Windmill....J. B. and A. Haslinger
Windmill....M. L. Mahoney
Window screen hanger....C. F. Courson
Wire cutting machine....F. H. Nullmeyer et al.
Wire lines, Apparatus for constructing or repairing....E. A. Fredeen
Wire reel....J. M. Roeder
Wire stringing tool, Line....H. A. Menager
Wire winding machine....A. L. Eastham
Wrench....G. Markus
Wrench....C. E. Townsend
Wrench....F. C. Miller
Wrench....H. E. Logan

Issued August 27, 1912.

MECHANICAL PATENTS.

Abrasive apparatus....E. J. Bein
Acid, 5-nitro-2-aminobenzene 1-arsinic....L. Benda
Acid tank....S. Q. Wilkinson
Adding machine....J. R. Harbeck
Advertisement displaying apparatus....M. E. Pudney
Advertising card....H. K. Tabler
Aerial machine....C. J. Matson
Agricultural implement....W. W. Johnson
Air compressors, Fusible plug for....C. B. Hodges et al.
Air deflector....H. C. Dunlavy
Air or gas compressor....O. H. Castle
Airship (2 pats.)....J. G. Bauer
Airship....J. A. Conterio
Airship....J. G. E. Danielson
Alarm device....J. Marshak
Alarm mechanism....C. S. Olson
Alizarin from anthraquinone, Production of....C. Mollenhoff
Alizarin, Production of....C. Mollenhoff
Alkali metal cyanids, Manufacturing....J. A. Kendall
Altar, Viaticum cabinet....C. Gay
Alumina from feldspar, Extracting....S. Peacock
Anhydrous hydrosulfites, Production of....E. von Portheim
Anode support (2 pats.)....C. E. Leffel
Anvil....T. Vezie et al.
Atomizer, Adjustable....W. D. Baker
Automobile....H. A. Moyer
Automobile radiator....C. G. Boeck
Automotoneer....G. W. Hamilton
Axle box lid, Car....A. C. McCord
Axle for motor vehicles, Driving....T. J. Lindsay
Axle structure, Worm drive....T. J. Lindsay
Back pedaling brake....O. Schlick
Bag fastener....F. A. Fuller
Bag filling machine....W. A. Joplin
Bag stringing machine....J. T. Dalton
Baking pan....W. Matthiessen
Ball retainer....C. E. Colegrove
Balloons, airships, &c., Shelter for dirigible....R. Alexander Katz
Bank note cutting and printing machine....R. H. and W. J. Arney
Barrel heater....R. Dronia
Battery box....H. M. Fisk
Battery vault....G. H. Macdonough
Bearing, Roller....C. A. L. Bach
Bed attachment....J. B. Leek
Bed ventilating device....M. Uschold
Bedstead, Sofa....M. Thompson
Beehive....A. B. Anthony
Bell, Electric....H. A. Schmidt
Bell ringing mechanism....H. Vissering
Berth, Sleeping car....C. Brandt
Bin door....O. H. Dickerson
Bleaching apparatus....R. Weiss
Blower for boilers, Soot....A. V. Bayer
Booker cover holder....R. Krumming
Book support, Adjustable knockdown....C. B. French
Bookbinding machine....D. E. Woodhull
Boot and shoe upper shaping machine....E. Langenohl
Boring machine....S. L. Martin
Bottle closure....P. D. Laible
Bottle closure....J. S. Ramsey
Bottle, Non-refillable....O. Johnson
Bottle, Non-refillable....J. G. Smith
Bottle or like vessel, Non-refillable....W. H. Nosworthy et al.
Box corner stays, Machine for applying....C. R. Seymour
Box covering machine....M. D. Knowlton
Box lining machine....E. O. Hiller et al.
Bracelet....M. L. Robins
Brake rigging....J. S. Wathey
Brake shoes, Reinforced back for....W. C. Chipps
Briquet machine....G. Komarek
Brooms and brushes, Dust cover for....J. S. Atwater
Brush and currycomb, Combined....R. N. Sikes
Buckle....C. E. Patton
Buoy-guard....H. L. Bethel
Bustle and hip form, Combined....C. H. Scott
Button making machine....F. M. Keane
Caissons and building piers, walls, &c., Sinking joint....D. E. Moran
Calendar pad and holder....J. C. Stevens
Calk plates and carrier, Combined....G. S. Meyer
Camera, Knockdown enlarging....H. Burke et al.
Can cover, Garbage....W. A. Austin
Can filling machine....E. P. Holden
Can lifter, Ice....I. J. Vest
Cans and the like, Apparatus for cleaning milk....H. Allesoe et al.
Canning and drying apparatus....J. C. Everton
Canning, Exhaust box for fruit....W. C. Anderson et al.
Canning sardines....E. M. Lawrence
Canopy screen for doors....L. S. Couplin
Car brake....C. Mineart
Car brake (2 pats.)....P. Brown
Car construction, Box....W. P. Bettendorf
Car coupling....H. C. Buhomp
Car door....B. D. Jones
Car door....B. F. Forbes
Car door fastener....J. R. Carmer
Car door structure....B. D. Jones
Car dumping mechanism....H. S. Salmon
Car grain door, Box....A. E. H. Steinmann
Car screen, Coal....G. Huettel
Car underframe, Railway....E. Posson
Carbureter or mixer for internal combustion engines....E. G. Atkins
Carding machine....P. Hardman
Carpet cleaner, Pneumatic....R. W. Thorne
Carriage window....A. M. Modry
Cartons, Removable end closure for....G. W. Beadle
Cartridge belt or carrier....V. H. Jennings
Cash and credit register....E. S. Church
Cash register....W. H. Muzzy
Castings, Hardening steel....J. W. Gebhard
Catalytic reactions, Conducting (2 pats.)....W. M. Grosvenor
Cement mortar and concrete waterproof, Rendering....R. A. Plumb
Cement or concrete tie mold....H. E. Percival
Cementitious products, Producing....S. W. Ramsey
Chain....A. F. Harlan
Chain link....W. D. Tusten
Chains, Safety link for draw bench....W. W. Kennedy
Change making apparatus....E. N. Kleinbaum
Chiropractor's adjusting table....J. A. Coultrup
Chuck for holding gears....G. K. Garvin et al.
Chuck, Magnetic....L. W. Downes
Chuck, Multiple unit....L. W. Downes
Circuit breaker and distributer, Combined....C. A. Pfanstiehl
Circuit closer, Time controlled....H. P Christianson
Circuits, Transformer cut-out for alternating current....J. S. Peck
Clay, &c., Purifying....H. Gruber
Clearer stick, Collapsible....F. H. McDevitt
Clipper (Reissue)....O. Karcher
Clock, Electric....J. W. Swain et al.
Clock stem winding and setting mechanism....C. H. Bell
Closet bowl....C. W. Beswick
Closing disk....W. L. Wright
Clothes hanger....R. L. Gladden
Clutch....L. J. Campbell
Cock, Steam gage....J. W. Fuller
Coin, receptacle....J. F. Schwartz
Coke from horizontal and inclined retort-ovens, Method of and apparatus for effecting graded delivery of....H. Koppers
Columns and the like, Making shapes for....J. E. York
Comb cleaner....N. H. C. Pihl
Compressor, Rotary....A. Huguenin
Computing device....H. Daemen-Schmid
Concrete burial case mold....F. S. Clark
Concrete structures, Anchor or bolt insert for....L. P. Hazen
Condenser....G. B. Petsche
Conserves, Treating....B. Arkell
Contact mechanism....P. R. Werner
Corkscrew....E. Earle
Corn cutting machine, Green....J. M. C. Jones
Corn extracting device....R. B. Parker, Jr.
Cover, Folding....A. J. Mahler
Cranking device....P. Christensen
Crate, Folding....G. M. Brown
Crate, Folding....E. L. and A. F. Meyer
Crate, Folding fowl....O. F. Hutchison
Cream ripener....C. C. Plummer
Cultivator....F. C. Warne
Culvert....G. A. Belding
Current rectifier system....Q. A. Brackett
Curtain holder....C. M. Bergstrom
Curtain socket....W. H. Edsall et al.
Cushion tired wheel....N. Gratz
Cut-off device....W. F. Dickey
Cycle saddle, Motor....F. Mesinger
Cycle seat or the like....V. W. Phillips
Dampener, Clothes....P. M. Haw
Dental casting machine....F. A. Carter
Dental process....F. A. Carter
Dentimeter....W. B. Strubble, Jr.
Depilator....J. Sabo
Die head....B. Borden
Dish drainer....F. Sonnemann
Dish washer....I. McClure
Disinfecting apparatus....G. C. Beeman et al.
Display and icing can or box, Sheet metal oyster....A. S. Jackson
Doily mat....W. N. Parker
Door and window closure....B. C. Rockwell
Door attachment....O. Klonower
Door hanger track....A. J. Eggleston
Door holder....R. B. Ogden
Door mat (Reissue)....E. M. Forbes
Draft and bufling mechanism, Friction....I. Simpson
Drill....W. E. Thrasher
Drill bit, Rock....A. S. Meguire
Drinking cup, Collapsible....F. C. Smith
Drinking fountain and faucet, Combined....F. D. Jacobs
Druggist's device for dividing powders....J. D. Knowlton
Effervescent compound....E. H. Strickler
Electric current controller....H. Kaeter
Electric current distribution system....H. M. Scheibe
Electric induction furnace....A. E. Greene
Electric light devices, Combined socket-cover and shade holder for....L. W. Andersen
Electric light socket....T. A. C. Both
Electric machine, Dynamo....M. Walker
Electric machine, Dynamo....F. C. Hall
Electrical circuit protector....C. A. Rolfe
Electrical coil and making the same (2 pats.)....C. R. Underhill
Electrical coils, Making....C. R. Underhill
Electrical distribution system and apparatus....V. G. Apple
Electrode, Arc lamp....G. Egly
Electrolytic cell....F. H. Briggs
Elevating apparatus, Car or carrier for....F. H. and F. H. Brown
Elevator cleaner and scraper, Grain....H. Farrar
Elevator indicator....F. A. Boedtcher
Engine crank device, Internal combustion....G. C. Cornell
Engine starting device, Internal combustion....D. E. Crouse
Engine stop, Automobile....L. P. Strong
Engines, Combined muffler and exhaust-pipe for internal combustion....W. T. Rice
Erythrene, Producing....G. Merling et al.
Evaporating apparatus....H. Kayser
Exhibitor, Chart....R. H. Stone
Explosive, especially suitable for the preparation of pressed pieces and making the same, Granular....O. Reuter
Extensible bracket....A. F. Pieper
Eyeglass lens mounting....J. W. Kelley
Eyeglass reel....C. N. Hiner
Eyeglasses....A. A. Day
Eyeglasses....P. H. Herbert
Eyeleting machine, Gang....J. J. Doidge
Feathers from fowls, Machine for picking pin....C. W. Smith
Feed box....A. W. Wendorf et al.
Feeder, Poultry....V. V. Moore
Feeder, Stock....R. A. Williams
Fertilizer distributer....W. Maxwell et al.
Fertilizer distributer....G. W. Smith
Fertilizers, Making....L. Saarbach
Filing device....A. F. Staples
Filter....C. B. Houser, Jr.
Filter, Continuous rotary....A. A. Holland
Fire escape....M. B. Feinen
Fire escape....R. Lang et al.
Firearm, Magazine....W. Bennett
Fish, Automatic mechanism for handling, cutting, and flaking....F. D. Cleveland
Fish dressing machine....G. Pomeroy
Fish handling and flaking machine....F. D. Cleveland
Float, Ball....L. A. Cornelius
Flush, Closet....H. W. Merkel
Flying machine....D. Segal
Flying machine....J. Raclot et al.
Food, Producing stock....J. Stehlin
Footwear pad....L. S. Samuel
Footwear with heels, Washable....A. Hale
Form locking device....T. H. Irvin
Form, Waist....E. Levin
Frequency meter....A. F. Poole
Fruit jar....E. E. Carlson
Furnace attachment, Melting....R. T. Johnston
Furnaces, Automatic draft regulator for steam boiler....F. W. Harrington
Furnaces, Securing rabble arms of roasting....U. Wedge
Fuse, Snap switch, multiple....N. E. Lemmon
Gage holder, Steam....G. E. Bailie
Game....J. Eliscu
Garment, Combination lady's and miss's....D. M.Router
Garment hook....G. H. Cliff
Gas burner lighting device....G. H. Schaetzel
Gas washing plant....H. D. Williams et al.
Gasket setting mechanism....A. M. Saunders
Gear wheels, Cutting helical....W. F. Zimmermann
Gearing, Friction....J. Geissler
Gearing, Transmission....C. C. Earnist
Gearing, Variable transmission....J. Novak
Globe holder....F. M. Brooks
Glue spreading machine....C. D. Crandal
Glycerin, Condensing....W. Rintonl et al.
Governor for explosion engines....N. T. Harrington
Grate....F. W. Stnrdevant
Grease gnn closure....J. F. Craven
Grinding machine (2 pats.)....J. Bath
Grinding machine, Ball....B. Eitner
Grooving and cutting machine....F. W. Raguse
Guard finger....W. Gaterman
Gutter bracket....C. H. Sparks
Hackling or braking machine....E. J. Feuillette
Harrow, Disk....F. K. Lathrop
Hat form....I. S. Kallis et al.
Hat pin point protector....S. Papanek
Hat pin point protector and fastener....J. Kubinyi
Hats, Manufacture of....W. W. Martin
Head gate, Radial....N. L. Hall
Headlight for vehicles, Controllable....W. B. Hargreaves
Headlight operating device....H. D. Peters
Heat energy, Utilizing (2 pats.)....W. H. Smyth
Heating-pad, Electric....G. Jahr
Heating system....E. E. Gold
Heel protector....S. M. Matthews
Hemp brake....M. Catrow
Hinge....A. L. Sessions
Hinges, Alining plate for floor....O. Katzenberger
Hog scraping machine....L. Burk
Hoof protector....H. S. Erb
Hook setting machine....A. Raiche
Hopper, Conveyer....H. S. Gardner
Horse boot....C. B. Tuttle
Horseshoe....G. Robins
Hydrant....H. F. Mcurling
Hydrocarbon engine, Liqnid....E. Hudson
Hydrocarbon motor....S. D. Waldon
Ice cream making machine....W. A. Model
Ice track....W. J. Shedd
Impulse transmitter....E. E. Clement
Incubator....T. G. Mellinger
Incubator and brooder alarm....J. Trapp
Indicator lock....F. S. Owen
Inhaler....G. W. White
Insole....R. Flyte
Intensifier....W. J. Martin
Internal combustion motor....E. P. Williams
Iodin solution (Reissue)....J. Wemer
Ironing board....B. M. Carlson
Ironing table, Folding....G. V. Murray
Isoprene, Producing....G. Merling et al.
Kerosene burner....J. Henning et al.
Keyboard contact....C. E. Rowe
Kinematograph films, Cutting out contour-bands used in coloring....C. Sciamengo
Lace making machine....A. Mattitsch
Lacing-hook setting machine (Reissue)....W. H. Kingston
Ladder....H. S. Thompson
Lamp, Arc....W. R. Mott
Lamp fixture, Electric....W. I. Miller
Lamp for motor cycles....J. W. Erickson
Lamp hanger, Incandescent....C. Sorensen
Lamp, Incandescent electric....E. H. Tate
Lamp socket, Electric....C. H. Bissell
Lamp support....C. H. Wood et al.
Lard compounds, Apparatus for chilling and whitening....J. N. Humphreys
Lasting machine....C. Keighley
Lathe, Automatic jar ring....A. J. Wills
Leaf turner....E. M. Fraser
Leather, &c., Compound for polishing....H. Schafer
Level, plumb, and grade-finder, Combined....D. W. L. Frank, Sr.
Lever operating mechanism....G. W. Seaman
Line protective device....J. Erickson
Linotype machine attachment....C. L. Mohr
Liquid fuel burner....J. Harper
Liquid, Macnine for filing receptacles with....L. A. Baker
Liqnid mixing apparatus....J. J. Matheson
Liquid, Raising or forcing....H. A. Humphrey et al.
Lock....G. B. Snyder

Liquids of different gravities, Apparatus for separating.....E. C. Kendall
Lock.....B. Borlund
Locking mechanism.....F. F. Wilsou
Locomotive, Articulated.....G. M. Eaton
Locomotive, Electric and steam.....J. F. Pope et al.
Locomotive sanding apparatus, Attachment for.....J. E. Baumberger
Locomotive valve gears, Inertia device for.....J. S. Kiesel
Loom shuttle (2 pats).....C. G. Petzold
Loom shuttle, Self threading.....H. A. Kennedy
Lubricator.....H. A. Swansou
Machine brake.....C. Evers
Machine element.....W. H. Robinson
Make-and-brake device.....C. F. Splitdorf
Match box holder.....B. F. Klein
Match making apparatus.....W. H. Parker
Measuring and can filling machine.....J. F. Craven
Measuring apparatus, Tailor's.....F. M. Schmidt
Meat and sausage cutter.....J. Masson
Mercury cut-out switch, Centrifugal.....F. E. Fisher
Metal separator and collector..S. L. Boggs
Metals, Electrodeposition of..J. A. Corey
Metals, &c., Process of and apparatus for atomizing.....J. M. Neil
Metallic articles, Produciug...O. L. Heintz
Minnow catching and entrapping means.....I. C. Crane
Mixing machine.....H. Mueller
Mold drying apparatus.....J. A. Jones
Moldboard.....C. K. Miller
Money holder.....B. C. Maxwell
Mop, Dry.....G. F. Bassett et al.
Motor control.....W. Naumann
Motor controller, Electric.....T. Varney
Motor controller, Electric....W. A. Paris
Motor or other vehicles in case of accident, means for identifying (2 pats.).....O. A. Weissenborn
Mower, Lawn.....W. E. Graham
Music leaf turner.....O. I. Searles
Music leaf turner.....S. J. Cole
Music sheet (Reissue).....H. Pierce
Nitrates, Manufacture of alkaline and earthy alkaline (2 pats.).....P. A. Guye et al.
Nitrogen compounds, Manufacturing.....A. Schweitzer et al.
Nitrogen from the air, Obtaining substantially pure.....C. Blagburn
Nut huller.....W. Chappell
Nut lock.....R. Fletcher et al.
Nut lock.....L. A. Garchey
Nut lock.....O. Allen, Jr.
Nut lock.....A. S. Fox
Nut lock.....T. A. Truman
Nut lock.....J. B. Cullen
Nut, Toggle.....J. Kennedy
Oil burner.....H. A. Kelley
Oil burner.....F. D. Walters et al.
Oils, caoutchouc, resins, &c., Manufacuring substitutes for.....L. Lilienfeld
One piece bracket...L. A. Buffinger et al.
Ore roasting furnace.....T. Edwards
Ore treating apparatus.....A. J. Arbuckle
Oscillatory motor.....R. Rainalter
Oven for baking pretzels.....M. L. Davis
Package.....G. Magee, Jr.
Padlock.....G. S. Franki
Paint or varnish removing composition.....J. M. Wilson
Paper cutting machine..T. C. Dexter et al.
Paper, Drying apparatus for printed sheets of.....W. A. Spurrier
Paraffin container and shaver..J. F. Craven
Past machine.....S. S. Yenovkian
Pasting machine.....H. A. Inman
Perambulator.....D. R. Collier
Percolator, Coffee.....L. Wojidkow
Percussion tool, Fluid operated.....C. H. Haeseler
Phenylethylcyanoacetic ester....H. Horlein
Phenylethymalonic ester.....H. Horlein
Photographic instrument....F. B. Millard
Piano player and like instrument.....W. H. Grimsdale
Piano players, &c., Actuating mechanism for.....G. P. Brand
Piano players, &c., Pneumatic action for..G. P. Brand
Piano players, Tempo-controlling mechauism for.....P. Wuest, Jr.
Piano violin.....W. E. Fox
Pianos, Power pneumatic for player.....J. Leisch
Picture machine, Moving..G. W. Bingham
Piers, shafts, &c., Building...D. E. Moran
Pile protector, Wooden....A. L. Reynolds
Pin attachment.....W. H. Morgan
Pipe automatic coupling, Air...C. Walerius
Pipe balls, Treating.....L. W. Joues
Pipe coupling clamping ring..G. H. White
Pipe joint.....R. R. Rust
Pipe wrench.....W. L. Bessolo
Pipes or casings from earth borings, Jack for removing.....A. C. Ludlum
Planer head, Matching.....F. L. Lane
Plow.....W. A. Prilliman
Plow.....W. L. Paul
Plow, Gang.....C. H. Taylor
Plug coil.....E. C. Wilcox et al.
Pocket for garments, Rule.....S. Kirshen
Poison indicator.....W. B. Eastburn
Pole changer.....C. J. Erickson
Polishing machine.....H. Robiuson
Post hole digging machine.....S. Dixon
Potato digger.....J. Hist
Power transmission system.....A. Sundh
Press plate.....W. S. Hadaway, Jr.
Propeller.....C. R. Haas
Pulley, Friction.....C. C. Butler
Pump.....J. H. Sebald
Pump.....P. H. Shue
Pump.....G. A. Toaz
Pump and pitcher, Combined.....G. M. Freeman
Pump governor (2 pats.)..H. M. P. Murphy
Pump, Lubricating.....E. L. Russell
Pump, Sand.....R. L. Dutton
Pump, Well.....J. E. Gable
Rail tie and fastener.....G. A. Humason
Rails, Foot guard for switch..W. C. Passer
Railway tie.....S. B. Kull
Railway tie.....G. H. Treharne
Ratchet brace feed mechanism.....J. Dahn
Razor stropper.....F. Myers
Receptacle, Collapsible.....I. Conen
Receptacle for containing and dischargiug semisolid and pasty substances (3 pats.).....I. F. Craven
Recording lock.....F. E. Benzing
Reel.....W. A. Kilmer et al.
Reel.....A. F. Rietzel
Refrigerator car.....G. E. Knepper
Refrigerator, Window.....L. P. Nichols
Resilient wheel.....W. W. Darling
Roller and breast mill.....I. A. Chavanne
Rope or cord coupling.....G. Mongardi
Rotary engine.....G. A. Bauer
Rotary motor.....J. C. Porter
Rubber to metals, Attaching.....L. Daft
Sad iron handle.....F. H. Knight
Sad irons, Electric switch for.....C. P. Madsen
Salt trough.....W. A. Cogdill
Salts non-corrosive, Rendering commercial.....S. Peacock
Sash and transom, Deck.....T. W. Cottle
Sash lock.....W. J. Diedrich
Sash securing appliance, Window.....B. F. Bowen
Sausage skiu and produeing it, Artificial..C. H. Hasselblad
Saw.....O. J. Dufault
Saw, Metal cutting.....F. A. Hunter
Sawmill knee adjusting mechanism.....A. J. Farrell
Scaffold bracket.....T. A. Wilkerson
Scale, Beam.....C. D. Bishop
Scenic apparatus.....J. Dove
Screw, Box.....H. G. Collins
Screw joint coupling for supply pipes, Adjustable.....P. Mueller et al.
Seal.....A. E. Irons
Selective signal.....L. W. Carroll
Separator and volatilizer..A. T. Edmonson
Sewer cleaning, flushing and disinfecting device.....H. Sieben et al.
Sewing machine presser foot.....R. K. Hohmann
Sewing machine work holder, Button.....G. S. Gatchell
Shade bracket.....C. D. Reed
Shade bracket, Window.....D. A. Roberts
Shade holder.....R. E. Ewing
Shearing machine.....E. Sauter
Sheet metal door construction.....E. Gustafson
Shifting device.....E. C. Smith
Shirt.....T. Silberman
Shock absorber.....F. M. Rennie
Shoe block leveler.....J. R. Haupenthal
Shoes, Filling the bottom cavities of.....A. Thoma
Sifter, Flour.....L. V. Daniels
Signaling device and the like, Apparatus for training and locking.....R. H. Manson
Signaling system, Electric..K. A. Hawley
Siren.....M. Roellig
Skid.....W. V. Ellis
Slipper.....A. Horvitz
Sole, Antislip.....F. and G. Wodtli
Spacing machine.....W. J. Patchell
Spool holder.....C. Kamp et al.
Spring construction.....S. M. Raftery
Spring wheel.....H. W. Good
Spring wheel.....W. Hill
Sprinkler.....E. Wismar
Sprinkler.....C. H. Busch
Square, Try.....C. G. and P. A. Larson
Stapling machine.....L. R. Heim
Station indicator..A. J. and F. J. Pancratz
Stave cutting machine...E. C. Thorschmidt
Steam boiler and water heater, Combination.....L. Lukacs
Steam engine.....E. W. Phillips
Steam engine.....J. M. Parsons
Steam, Utilizing exhaust.....J. Schindler
Steering apparatus, Vessel.....J. Irvin
Sterilizing device.....J. J. Hardie et al.
Sterilizing milk and other organic liquids, Process and aparatus for...J. Desmaroux
Stove leg, Supplemental adjustable.....J. W. Salisbury
Stoves, Pilot burner for gas..A. C. Mott, Jr.
Straw spreader.....J. H. Mott
Street and railway track structure.....A. Ostheimer
Street sweeper.....J. D. Curtis
Sugars, Producing fermentable.....F. E. Gallagher et al.
Suspender garter for stockings..H. Fenton
Switch.....J. S. Purcell et al.
Switching device.....J. H. Lehman
Syringes, &c., Piston for hypodermic.....P. J. McElroy
Tag bracket, Automobile license.....E. M. Rosenbluth
Tank elbow, Flush.....H. D. Moise
Tanning compound.....D. W. Brown
Target.....W. C. Miner
Telephone.....W. W. Dean
Telephone apparatus.....C. F. Dolle
Telephone call register.....C. V. Richey
Telephone exchange system..E. E. Clement
Tennis court corner marker....A. Johnson
Thermometer case.....W. R. Archibald
Thyroid glaud extracts, Produciug.....E. Hoennicke
Tie.....S. Bzsan
Tiling and mold therefor, Well...W. Mach
Tiles, Machine for forming cement.....F. S. Hartwell et al.
Tire.....G. V. Benninghoff
Tire armor.....H. Auperl
Tire removing device.....W. L. Tobey
Tire signal, Pneumatic.....F. L. Fuller
Tire tread.....J. A. Bowden
Toilet shield, Sanitary....N. D. Hopkinson
Tongs, Box.....R. L. Lathrop
Tool, Cleaning.....J. D. Drum
Tool, Folding compound.....W. L. Marble
Tool holder.....W. Parker
Tooth, Artificial.....F. A. Carter
Tortilla molding machine....S. Escamilla
Towel holder.....A. M. Larseu
Toy.....G. C. Lasares
Toy wagons, &c., Driving mechanism for.....A. Lodge
Traction engine.....C. A. Olson
Traction engine, Agricultural automobile..F. Theillier
Traction wheel.....K. N. Avery
Traction wheel.....W. S. Morton
Train stopping device.....E. Unverricht
Transmission mechanism, Reversing.....N. T. Harrington
Transmitter for the deaf.....H. Tideman
Treadle mechanism.....J. A. Byers
Trolley.....F. Bury
Trolley trackway, Overhead....E. Y. Moore
Trowel.....J. D. Baugh
Truck.....A. L. Clark
Truck, Car.....J. C. Barber
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Truck construction and insulation.....A. L. Bower
Truck, Dump body motor....R. S. Cassady
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Truck, Railway car.....W. H. Armstrong
Trunk fastener.....A. L. Sessions
Trunk lock.....J. Brewer
Tube cleaner (2 pats.).....W. S. Elliott
Tube making apparatus.....J. Mayor
Tube testing apparatus.....A. M. Saunders et al.
Tubes, Apparatus for mounting and dismounting flexiole.....W. A. Lorenz
Tubular receptacles, Machine for making..J. Nazel
Turbine.....W. J. A. London
Turbine, Steam.....R. H. Pyle
Type forming machine.....M. Pfau
Type setting and distributing machine.....W. A. Twining
Typewriting and computing machine, Combined.....A. W. Smith
Typewriting machine.....O. B. Yaw
Typewriting machine.....H. H. Steele
Umbrella.....C. Schonert
Vacuum cleaner.....C. A. Lindberg
Vacuum cleaning systems, Valve for.....C. R. Thurman
Valve.....W. V. Smith
Valve.....E. F. Fitzgerald
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Valve reversing gear.....C. L. Heisler
Valve, Steam, air, and water trap.....F. W. Leuthesser
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Valve, Universal.....W. H. Butz
Valveless engine.....W. Mauss
Vehicle body.....F. A. Brand
Vehicle shock absorber, Pneumatic.....G. Kanter
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Vehicle wheel.....W. C. Allen
Vehicle wheel.....A. H. Flournoy
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Vehicle wheel.....A. R. Wylie et al.
Vehicle wheel.....T. J. Holland
Vehicle wheel, Pneumatic.....G. Kanter
Vehicles, Means for braking traction.....W. E. Paine
Vent box.....G. H. Backmire
Washing berries, vegetables, and fruits, Machine for.....W. Fink
Waste receptacle.....M. M. De Grody
Watchmaker's electric heater.....P. and F. Lux
Water closet, Sanitary.....J. C. Seyl
Water heater, Electric.....R. R. Foster
Water heating apparatus.....G. H. Gibson
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Water motor.....H. R. Irwin
Water tank bracket.....F. A. Tyler
Water wheel bucket.....R. Siegmund
Watering or feed trough, Self cleaning.....E. P. Rose
Wave motor.....N. G. Olson et al.
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Wax, Apparatus for the extraction of.....E. C. Smith et al.
Weaving, Harness for cross (2 pats.).....J. Kaufmann
Wedge bolt for locomotive pedestals and the like.....E. E. Yost
Weed digger.....R. R. Damoude
Welding machine.....H. Geiseuhoner
Wells, Tool for oil and the like..C. W. Bell
Wheel.....J. M. Johnson
Window.....J. Alsfasser
Window operator.....L. Lewandowski
Wire fabric.....N. Greening
Wire puller or come-along...D. W. House
Wire reel, Collapsible..W. A. Kilmer et al.
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Wire stretcher and tightener..J. J. Brown
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Issued September 3, 1912.

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Aeroplane.....A. Feall
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Air purifying apparatus..W. G. R. Braemer
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Anchor bolt.....F. J. Snyder
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Anvil and swage block, Interlocking.....J. W. Coyle et al.
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Auger.....L. W. Grissom
Automobile, &c., alarm.....A. Son
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Automobile hood (2 pats.).....C. S. Wood
Automobile locking device.....J. Bystrom
Automobile starting cranks, Means for locking.....W. J. N. Davis
Bag holder.....O. C. Kirkpatrick
Bandeau and hat fastener.....C. E. and M. Thornton
Barrel, Collapsible.....J. W. Sutherland
Basket, Wire.....R. P. Rodgers
Bath tub distributing valve..F. C. Rockwell
Bearing, Split roller.....J. Newmann
Bed.....W. J. Bosanko
Bed appliance, Hospital.....L. Witt
Bed, Exteusible.....A. McKnight
Bed, Folding.....L. B. Jeffcott
Bed or berth attachment....H. E. Perkins
Bedsteads, Clothes hanging attachment for.....C. Honest
Binder, Loose leaf (2 pats.)..L. M. Mordeu
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Bit and tap and die chuck..W. L. Procunier
Blanks, Mechanism for feeding angular-formed.....B. F. Rindfleisch
Boat shafts, Adjustable bearing for.....M. Hemmer
Boat, Submarine or submergible.....E. L. Peacock
Boats, Conning mechanism for submarine..T. S. Bailey
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Boiler insert.....W. M. Greaves
Boiler stud connection.....J. Shelton
Boiler tube cleaner.....R. W. Hamaun
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Book and bill file, Combined pass.....F. W. Kimmel
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Bottle cleaning machiue.....G. Weiss
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Bottle, Nursing.....J. C. Poore
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Brazing compound.....J. D Ge Bott
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Broom bundling machine...A. P. Longdon
Brush.....J. P. Wherry
Brush bristles, Machine for cementing...H. P. McMillan
Brush, Paint.....H. B. Williams
Bucket, Clam-shell.....C. J. Youug
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Car center bearing, Railway..O. Anderson
Car coupling.....J. F. and V. S. Durbin
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Car roof.....R. E. Frame
Car side bearing.....P. E. M. Norell
Car step, Adjustable.....F. J. Haas
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Carbon dioxid engine.....C. A. Anderson
Carbureter.....J. W. Raymond
Carbureters, Automatic regulation for.....E. P. Noyes
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Carriage or go cart, Baby....A. J. Adams
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Cement, &c., Apparatus for filling bags with.....J. S. Fasting
Cement compound and makiug the same.....E. Roy
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Chuck.....L. E. Whiton
Churn.....L. Hofer
Cider mill.....R. W. Brooks
Cigarette and match box, Combined.....W. L. Gleason
Circuit controlling mechanism...F. Bechoff
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Clock.....W. E. Porter
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Clothes hanger.....D. D. Jones
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Cock, Ball.....E. J. Kivell

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Coin sorting apparatus.....A. U. Wastfelt
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Collar clamp, Horse.....T. Voigt
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Concentrator, Slime.....W. F. Deister
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Concrete construction....C. W. Beverstock
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Condenser scraper.....H. P. Selick
Conduits, Holding sleeve for.....F. M. Brinckerhoff
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Cotton elevator and distributer.....J. N. Ellenburg et al.
Couch and folding bed, Combined.....E. C. Fisher
Covering and recovering surfaces.....G. Duensser
Cross head.....M. D. Joyner
Cultivator.....J. W. Jennings
Cultivator fender.....D. J. Ortou
Cultivator fender adjuster....W. H. Fox
Cultivator planter attachment.....J. P. Bradford
Cultivator shovel.....J. P. Stanza
Culvert pipe.....F. B. Zieg
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Current rectifier, Alternating.....C. P. Steiumetz
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Door securing device.....I. G. Dodge
Door stop.....A. A. Coffin
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Draft equalizer.....F. Hamm
Drawer slide.....J. J. Rooney
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Egg marking attachment for hens..A. Kurre
Electric heater.....C. H. Allen
Electric lighting or heating, Current regulating device or resistance applicable for.....W. Sumner
Electric time switch.....W. J. Brown
Electrical apparatus.....T. F. Croker
Electrolysis of liquids.....J. Billiter
Electrotype molds, Metallizing.....H. E. Goldberg
Elevator cars or cages, Guide for.....O. D. McClure
Elevator gate mechanism, Electrically operable open at will.....W. H. Kienker
Embroidering machine safety mechanism..J. A. Groebli
End gate.....D. W. Shaw
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Excavator.....M. G. Bunnell
Explosive.....J. F. O'Brien
Explosive engine.....H. J. Podlesak
Explosive engine.....W. A. Schaffer
Extensible table.....C. H. Harris
Extrusion press.....L. G. Derain
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Feed water regulator, Boiler..H. K. Gowdy
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File, Account.....W. J. Hainer
File, Clipping.....J. H. Neuhauser
Filter.....B. W. Traylor
Fire escape apparatus.....J. F. Scheuer
Firearm safety attachment...F. T. Russell
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Flour and meal making apparatus.....A. R. Tattersall
Fluid pressure brake apparatus.....M. Corrington
Flue expander.....J T. McGrath
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Flying shears, Automatic.....J. Simpson
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Garbage receptacle and the like..O. A. Trost
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Glass articles, Apparatus for the mauufacture of.....C. C. Stutz
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Glass gathering machine.....C. C. Stutz
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Gold saving aud amalgamating machine..R. Beyrle
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Grain drill.....C. A. Pattison et al.
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Grain loader.....P. J. Mulloy
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Grinding mills, Roll adjusting device for roller.....A. R. Tattersall
Grinding stoues, Bur for dressing.....T. E. Warren
Gun, Marble.....G. C. Kennedy
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Guns, Combined registering and feeding magazine for.....W. P. Pinkston
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Hair spring stud holding means.....W. W. Dudley
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Jar attachment, Fruit.....F. H. Mattees
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Lathe turret attachment, Engine.....H. Newmann
Lawn sprinkler and adiustable support, Automatic hose regulating.....P. P. Stack
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Packiug case (Reissue).....L. D. Morton
Pantographic apparatus for use of sculptors.....J. Ettl
Paper box machiue.....C. T. Upton et al.
Paper feeding mechanism, Table operating device for.....J. J. Duffy
Paper pulp screening machine.....B. D. Coppage
Paper roll making machine, Toilet.....F. Meisel
Pasty materials, such as chocolate, Apparatus for treatiug.....E. L. A. Savy
Pen.....R. P. De Vault
Pen, Calendar.....L. Stefanowitch
Pen, Fountain.....F. Riesenberg
Pencil holder.....R. Lewis et al.
Perch, Portable poultry..J. M. Beecher, Sr.
Phonophotoscope....W. J. Williams et al.
Phosphate, Makiug tri alkali.....E. H. Strickler
Photographs, Making....F. W. Battershall
Piano bench.....W. A. Kirkpatrick et al.
Piano, Electric.....I. B. Smith
Pianos, Hammer rail construction for pneumatic.....W. G. Betz
Pianos, Music turner for.....J. G. Boutte
Pianofortes, Adjustable music desk for....G. O. Furrow
Picture apparatus, Moving....E. L. Aiken
Pipe coupling.....F. J. Glover
Pipe wrench.....W. S. Wilkinson
Pipes, Removable mouthpiece for smoking..F. R. Lindley
Pistol holster carrier.....F. H. Audley
Pneumatic motor.....V. J. Johnson
Portfolio, Letter carrier's.....F. W. Wilson
Power wheel.....B. H. Johnston
Press.....M. A. Cuming
Pressure indicator.....W. Seymour
Printing device.....R. L. Boyd
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Pulverizer.....E. H. Frickey
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Pump, Centrifugal (2 pats).....A. E. Guy
Pump governor.....F. L. Jahu
Pump, Multiple cylinder..W. H. Newbrough
Radiator, Electrically heated steam.....J. S. Thompson
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Rail chair.....L. Zabawa
Rail fastener and tie, Combined..E. Young
Rail joint.....H. Lippert
Rail joint.....J. M. Copper
Rail joint.....D. W. James
Rail joint.....N. Smiar
Rail joint, Insulated.....J. A. Bodkin
Rail loader.....M. Feeney
Rail support.....G. W. Roemer
Railway chair and plate.....J. Isbell
Railway cross tie.....G. W. Curtiss
Railway crossing bells, Electrical contact for.....E. D. Every
Railway plows, Protecting device for electric.....W. L. Boyer
Railway switch.....W. D. Baldwin
Railway tie.....F. C. Mellinger
Railway tie.....M. A. O. Stilson
Railway tie.....S. Friedman
Railway tracks running along or across streets or roads, Curbing for..T. Asfon
Receptacle, Sanitary.....L. Hofer
Reciprocating engine.....R. Wintzer
Reed pipe, Dust proof....C. E. Barkstrom
Refrigerating apparatus, Portable.....W. C. Brady
Regenerator.....F. Hodgkinson
Resilient wheel, Metallic.....T. H. Coulter
Retort for the carbonization of coal or the like, Vertical.....A. M. Duekham
Retort setting, Constructing a.....G. W. Parker
Rifle.....P. T. Godsal
Rigging bracket, Release.....S. H. Conwell
Red coupling, Connecting..A. De Dion et al.
Rope engine for marine transfers.....T. S. Miller
Rotary engine.....C. T. Peigler
Roundabout.....J. A. De Vito
Rubber boot.....J. T. Crowley
Rule, Foldable.....C. Wagenlander
Sad irou heater.....A. B. Holley
Safety rack.....E. J. Perley
Sand blast apparatus.....H. B. Heaslet
Sash fastener.....J. F. Parent
Sash lock.....D. Dowd
Saw set.....A. Ahlden
Sawing machines, Board support for.....J. M. Reed
Scale recording device.....M. H. Winslow
Scarifier.....W. A. Gillette
Scoop box, Lock.....A. L. Smith
Scraper, Foot.....G. E. Holmes
Scraper, Road.....J. F. T. Berger
Scraper, Road.....W. Voland
Screeuing apparatus distributer..R. W. Dull
Screeus, Trap attachment for fly.....S. D. Clark
Selling device for foot ball bladders, &c...J. W. Albers
Sealing machine, Bottle.....W. F. Stone
Sectioual tank.....W. E. Shoemaker
Sewer pipe section for sewer building (2 pats.).....W. H. Rook, Jr.
Sewing machine for leather...C. J. Oberg
Sewing machine tuck creaser or tucker....L. M. Ford
Shade fixture, Vertically adjustable window.....S. Menuskin
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Shaft coupling, Compression.....C. W. Streeper
Shaft straightening machine....T. J. Paine
Sharpening safety razors, Maehine for....A. E. Hill
Shears.....L. H. Flory
Shock absorber.....A. Zeppelin
Shock absorber.....G. J. Plato
Shock absorber.....J. Benny
Shock absorber for gearing....W. T. Clark
Shoe jack.....G. W. Harrison
Sifter, Sand.....H. Tscherning
Sign, Illuminated.....H. Mulholland
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Silicon articles, Making.....T. B. Allen
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Siphons, Adjustable vent for..S. F. Miller
Skirt.....L. M. Savage
Skirt, Sanitary protecting.....J. M. O'Connor et al.
Skirt weight.....S. Paull
Sleeves, Shield attachment for.....M. M. Rogers
Slitting machine.....N. E. Clark
Slot closing device.....J. B. Jones
Soap dispensing machine..C. H. Dilg et al
Soap supplier.....C. H. J. Dilg et al
Socket wrench.....W. G. Peet
Spade handle, Auxiliary....T. H. DeHaven
Spark arrester.....N. J. Roether
Spark plug.....A. S. Pierrel
Spark timing device.....L. F. Goodspeed
Spindle.....W. L. and W. E. G. Robinson
Spinning aparatus, Yarn....A. E. Rhoades
Spinning frames, Builder for ring.....M. J. Leahy
Splice bar.....F. Powell
Sprayer for fire hose and the like.....J. B. Marshall
Spring.....R. J. Collins
Spring motor.....J. Rectenwald
Spring wheel.....D. Amerman
Spring wheel.....P. and A. De Bogory
Stamp handling machine..J. J. Schermack
Steam boiler.....M. F. Kennen
Steam engine.....P. Gerli
Steam trap or valve.....J. L. Fitts
Steel tie and rail fastener.....F. Zeller
Steel, Treatment of molten..J. W. Richards
Steering wheel device.....A. M. Squire
Stereopticon.....A. M. Smiley
Sterilizing apparatus.....J. Hauk, Jr.
Stilt.....A. H. Manu
Stool, Milking.....S. Evensen
Store service apparatus.....E. C. Gipe
Strap retainging attachment.....A. Wennerstrom
Stretching implement.....C. Greonier
Stud for use in building construction.....B. Dowd
Sugar and making same, Maple flavored....T. G. Hogan
Superphosphate chamber.....H. C. P. Freudenthal
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Tablet, Continuous.....T. M. Vaughan
Tag machine.....A. H. Swett et al.
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Tanks, Can guide and support for ice....A. F. Cramer
Telephone exchange system..E. E. Clement
Telephone system.....J. Kennedy
Telephones, &c., Ringer for..H. J. Roberts
Telescope, Binocular.....G. Meckbach
Testing instrument.....B. D. Coppage
Thermodynamic motor.....L. A. Haines
Thill coupling.....H. Reid
Ticket, Marking.....J. C. Edwards
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Tile machine, Cement.....G. L. Allen
Tire.....H. O. Bartlett
Tire.....T. Toomey
Tire armor.....J. R. Smith
Tire case.....C. F. Hopewell
Tire, Elastic.....P. W. Pratt

Tire fastening device.....W. L. Bauer
Tire making apparatus, Leather.....E. Spiegel
Tire, Resilient.....C. J. Koopman
Tire shoes, Making cores for manufacturing.....R. N. Hinman
Tire, Vehicle wheel.....J. A. Gehart
Tire, Vehicle wheel.....C. B. Howe
Tobacco, Device for testing the temperature of.....J. M. Cupley et al.
Tobacco pipe.....O. Kiessig
Tool, Fluid operated.....C. B. Richards
Tool handle.....M J. Haskins
Toothpick cutting knife.....W. C. King
Toy eye mask.....H. Grnenberger
Toy, Paper.....I. Schonherz
Toy telephone.....A. E. Redlich
Tracings, Rack for.....F. S. Baker
Traction engine.....W. Durran
Train controlling system, Automatic.....F. D. Shindel
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Trolley, Lubricating.....G. H. Merwin
Trolley wheel retainer.....S. A. Findnra
Trnck, Automobile.....J. Q. Primm
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Turbine packing gland, steam.....W. J. A. London
Type bar key action.....J. B. Secor
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Typewriting, adding, and subtracting machine, Combined.....J. A. Smith
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Unit, Spring.....J. H. Smith
Universal joint.....G. H. Brush
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Upholstering springwork.....E. M. Hnlse
Urn, Coffee.....F. L. Landergren
Vacuum apparatus.....E. Weintranb
Vacnum cleaner.....E. B. Symons
Valve, Gate.....W. H. Scott
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Valve, Relief.....W. O. Moody
Valve, Safety gas.....H. R. Cox et al.
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Valves, Automatic cut-out for trip.....E. H. Dewson
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Varnish.....L. H. Backeland
Vehicle brake.....T. N. Moore
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Vehicle spring, Motor.....A. E. Hall
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Wheel.....J. F. Wilmot
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Wheel rim jointing machine...G. A. Ensign
Wheel support.....M. G. Bunnell
Wheels, Resilient mounting for.....W. L. and G. H. Foster
Whiffletree hook.....G. H. Roberts
Wind shield.....H. A. Douglas
Window lock.....G. B. Roberts et al.
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Wire stretcher.....H. B. Powell
Wood, Preserved (2 pats.)...H. M. Newton
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Issued September 10, 1912.

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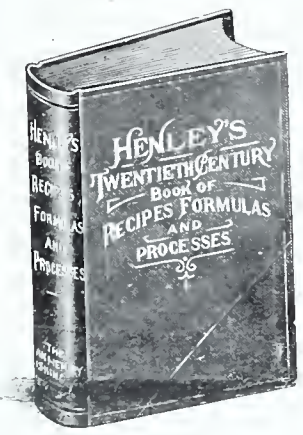
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Beating and mixing device..H. P. Roberts
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Billiard cues, Device for fixing caps to.....T. Detroyes
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Block signal system.....L. A. Hawkins
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Bobbin turning machine.....W. C. Farnum
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Boiler timing device.....F. W. Wood
Book holder.....J. R. Burnett
Book, Time.....J. M. Spiker
Boot holder.....W. D. Gilbert
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Bottle closure.....V. Zsuzsitz
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Bottle, Non-refillable.....R. W. Hawkins
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Bottle stopper.....W. J. Warner et al.
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Box.....W. I. Tuttle
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Box blank pasting machine..E. Jagenberg
Box lid lifter.....M. Fedder
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Brush for vacuum cleaners...W. T. Jones
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Cabinet, Theatrical schedule and advertising.....T. W. Mullaly
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Capsule or container for compressed or liquefied gases.....R. H. Campbell
Car door arrangement, Dumping.....E. W. Summers
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Car, Dumping.....A. N. Doud
Car mover shoe.....R. Miller
Car, Side dump.....H. J. Wessinger
Cars, Speed indicating equipment for railway.....A. B. Cadman
Cars, Speed measuring equipment for railway or other.....A. P Warner et al.
Carbon article.....C. A. Hansen
Carbureter.....G. W. Romans
Carbureter.....A. J. Weiss
Carbureter.....D. R. Wills
Carbureter.....M. R. Anstice
Carpet sweeper brush adjustment.....F. C. Mason et al.
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Cartridge shell..L. A. and H. E. Sherman
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Cash register.....W. H. Muzzy
Cash register signaling device....M. Jacob
Casings and the like, Shut-off head for.....W. Wagner
Caster wheel.....A. B. Clark
Chair.....R. S. Calef
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Cigar bunching machine.....N. Weiss
Cigarette form retainer and holder.....C. M. Callanan
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Cleaning and wiping device.....C. E. Taylor et al.
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Closet attachment.....H. R. Kiessig
Cloth board for winding fabrics thereon.....J. H. Ackroyd
Clothes pressing machine..D. C. Hale, Jr.
Clothes sprinkler, Self feeding..A. W. Tesch
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Coffee berries, Machine for removing pulp from.....J. M. Urgellis
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Coil forming apparatus.....M. Sandfield
Coin freed mechanism.....C. E. Hibberd
Coin sorting and testing apparatus.....S. Chiger
Coin wrapping machine.....F. Hart
Comb cleaner.....R. A. Harvey
Concrete making and aggregate handling device.....H. G. Butler
Concrete, Producing..H. J. Harms et al.
Concrete railway tie.....A. T. Scott
Conduit fish wire machine....F. Crawford
Conveyer, Lure.....O. P. Smith
Cooker.....J. Koppmann
Cooking outfit, Field.....C. A. Grover
Cooling device, Pneumatic..H. T. Sundstrom
Core, Cylinder.....F. E. Burk
Core retainer or lifter..C. S. Proctor et al.
Cork bark splitting machine.....A. H. Biertuempfel
Corner protector.....A. Priddle
Corset stay.....W. H. Flechsing
Cotton compass.....F. Phelps
Cotton mercerizing machine, Revolver.....J. Kleinewefers
Coupling and clamp, Combined....A. Sobey
Covers, Combined protective shield and attaching device for receptacle.....I. Schaffer
Cultivator, Motor driven hand.....S. G. Stevens
Cupboard and ironing board, Combined....A. G. L. Schwartz et al.
Curb and gutter form.....J. N. Heltzel
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Current distributer and timer..J. M. Smith
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Curtain pole.....H. A. Anderson
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Detonator magazine.....A. S. Hamilton
Door.....R. M. Zimmerman
Door bolt, Safety.....B. F. Foss
Door hanger.....J. T. McCabe
Door operator and lock.....T. H. Garland
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Drag, Road.....W. Stoops
Dredger, Suction and pressure.....P. Van Wienen
Drinking cup, Collapsible..H. F. Rengstorf
Drinking fountain.....T. E. Lindsay
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Driving mechanism, Reversible.....R. H. Johnson
Dust receptacle.....T. E. Mitchell
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Electric light socket..F. T. Moreland et al.
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Electric switch.....H. J. Morey et al.
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Engines, Means for the prevention of racing of marine.....F. Tanner
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Envelopes, Transparent panel for.....W. E. Swift
Equalizer.....J. H. Emert
Erythrene, Producing.....C. Harries
Evener attachment.....C. O. Thorson
Explosive (2 pats.).....J. F. O'Brien
Explosive.....H. P. Bostaph
Explosive, Safety.....N. Cejpek
Eyeglass mounting.....G. A. Bader
Fabric drying apparatus.....J. H. Schaller
Fan wheel, Centrifugal.....B. S. Foss
Fastener.....H. E. Robinson
Feed mill.....H. G. McCulloch
Feed water regulator...C. P. Phillips et al.
Fence, Portable.....E. J. Woodford
Fence post point, Detachable....C. Johnson
File, Office paper.....F. G. Gantner
Filing cabinet unit.....M. P. Exline
Filing device.....F. Howard
Filter.....R. P. Johnson
Filter.....J. S. Mullennix
Fire extinguisher.....J. B. Thomas
Fire extinguisher holder.....E. Schaefer
Fire hydrant, Street.....C. L. Howes
Fish line reel.....J. A. Ricketts
Fish net reel.....H. A. Monroe
Fish screen.....W. E. Clark et al.
Flange tester.....C. Browning, Jr.
Flash light apparatus.....C. A. Waldeck
Flue dust and the article of manufacture produced thereby, Briqueting..R. Hubner
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Game stick.....H. T. Penny
Garden implement.....L. W. Cone
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Gas burner, Safety.....E. F. Debley
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Gases, Purifying.....H. L. Doherty
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Gearing.....A. Van Wormer
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Glass cylinders, Machine for blowing.....J. Forster
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Glove.....H. Mahieu
Governor for engines, Shaft.....R. Wolf
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Horseshoe.....H. Graw
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Ice scraper.....G. B. Miller
Igniter.....H. Buttner
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Incubator heat regulator.....A. A. Howard et al.
Indicator.....L. A. Hawkins
Information and advertising device, Combined.....W. H. Coneby
Ingots, Treating metal....G. H. Benjamin
Insecticidal fertilizer cartridge.....F. G. Dokkenwadel
Insoluble bodies derived from phenol alcohols, Making.....L. H. Backeland
Insulator.....W. H. S. Nelson
Insulator.....J. Alsburg
Internal combustion engine...R. W. Coffee
Internal combustion engine..E. S. Michener
Jewelry safety catch.....E. P. Kohn
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Labeling machine.....C. H. Ohlsson
Labels to cans or the like, Machine for applying.....F. H. Knapp
Lamp.....W. S. Levings
Lamp.....F. A. Hall
Lamp and renewing the same, Incandescent electric.....R. Berrenberg
Lamp burner.....G. Eklund
Lamp holder, Portable protected.....R. B. Benjamin
Lamp, Miner's.....E. C. Mangin
Lamp, Reversible automobile.....G. F. Minhinnett
Lamp socket.....C. J. Klein
Lamp socket, Incandescent electric.....J. J. Rooney
Lantern attachment.....J. H. Peckham
Lathe dog.....E. J. Michaud
Lathe, Turrett.....H. Lauf et al.
Lens grinding machine.....W. K. Rogers
Level.....W. E. Grotevant
Lifting jack.....C. L. Crabb
Light fixtures, Socket cover for.....G. A. Richards et al.
Liquid distributing apparatus.....A. Satterstrom
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Lock.....O. W. Bedell
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Mail box.....T. H. Tumey
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Measuring apparatus, Rock..R. P. M. Davis
Meat, Apparatus for automatically basting fried or roast.....H. Siegrist
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(Continued in December Number)

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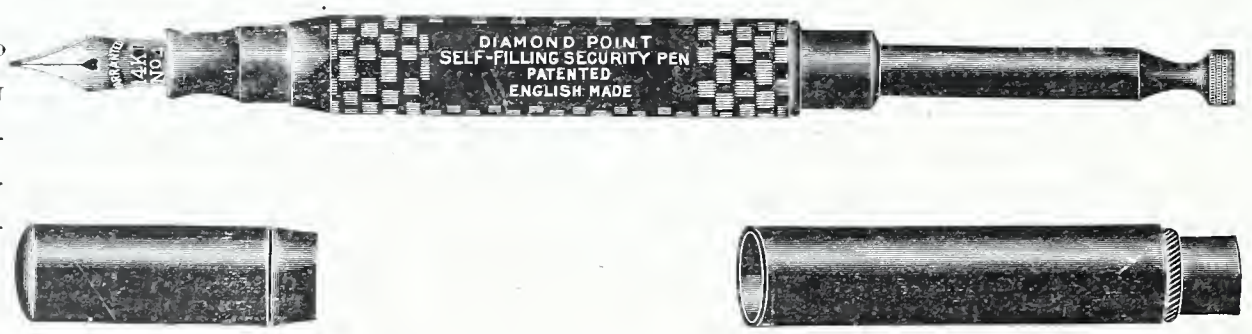
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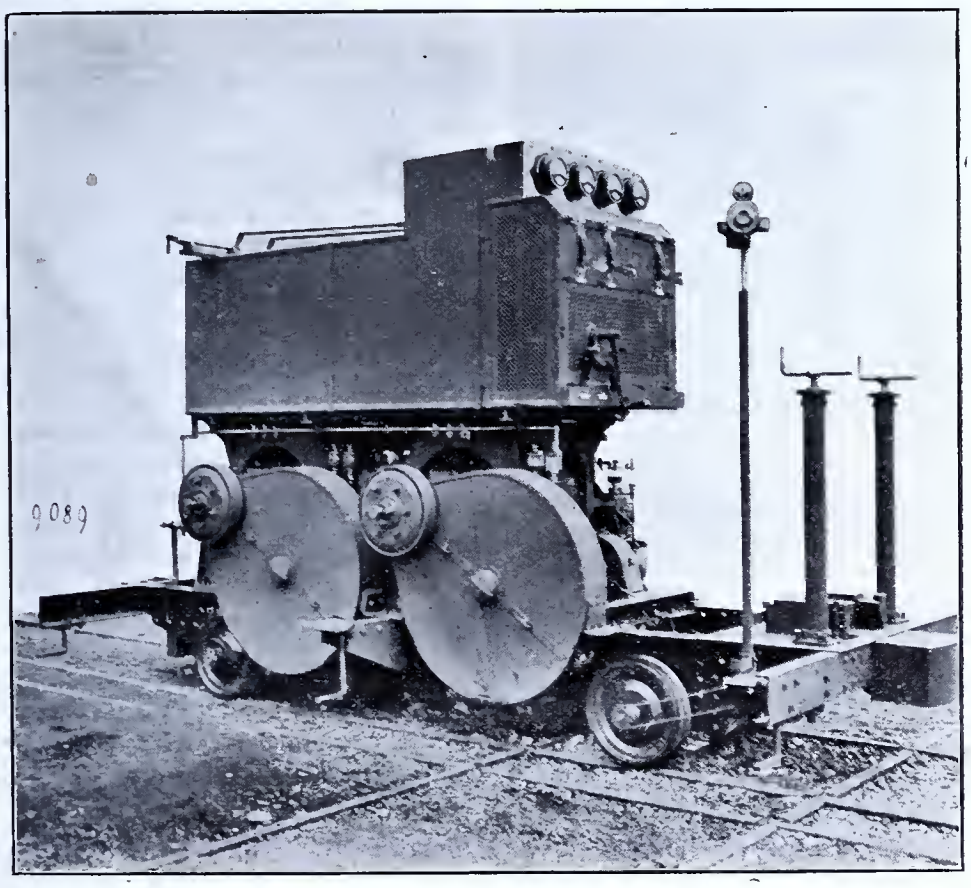
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VOL. XXIV. No. 12. } WASHINGTON, D. C.—DECEMBER 1, 1912. { SINGLE COPIES 10 CENTS. ONE DOLLAR A YEAR.

THE CORCOVADO ELECTRIC RAILWAY.

By C. VAN LANGENDONCK.

THE Corcovado electric railway, which ascends to the summit of Mount Corcovado, in the neighborhood of Rio de Janeiro, has recently been opened for traffic. The line has a total length of 2.3 miles, of which 68 per cent comprises curves. It starts from the city at an altitude of 130 feet and rises to 2.100 feet, reaching a point near the summit of the mountain.

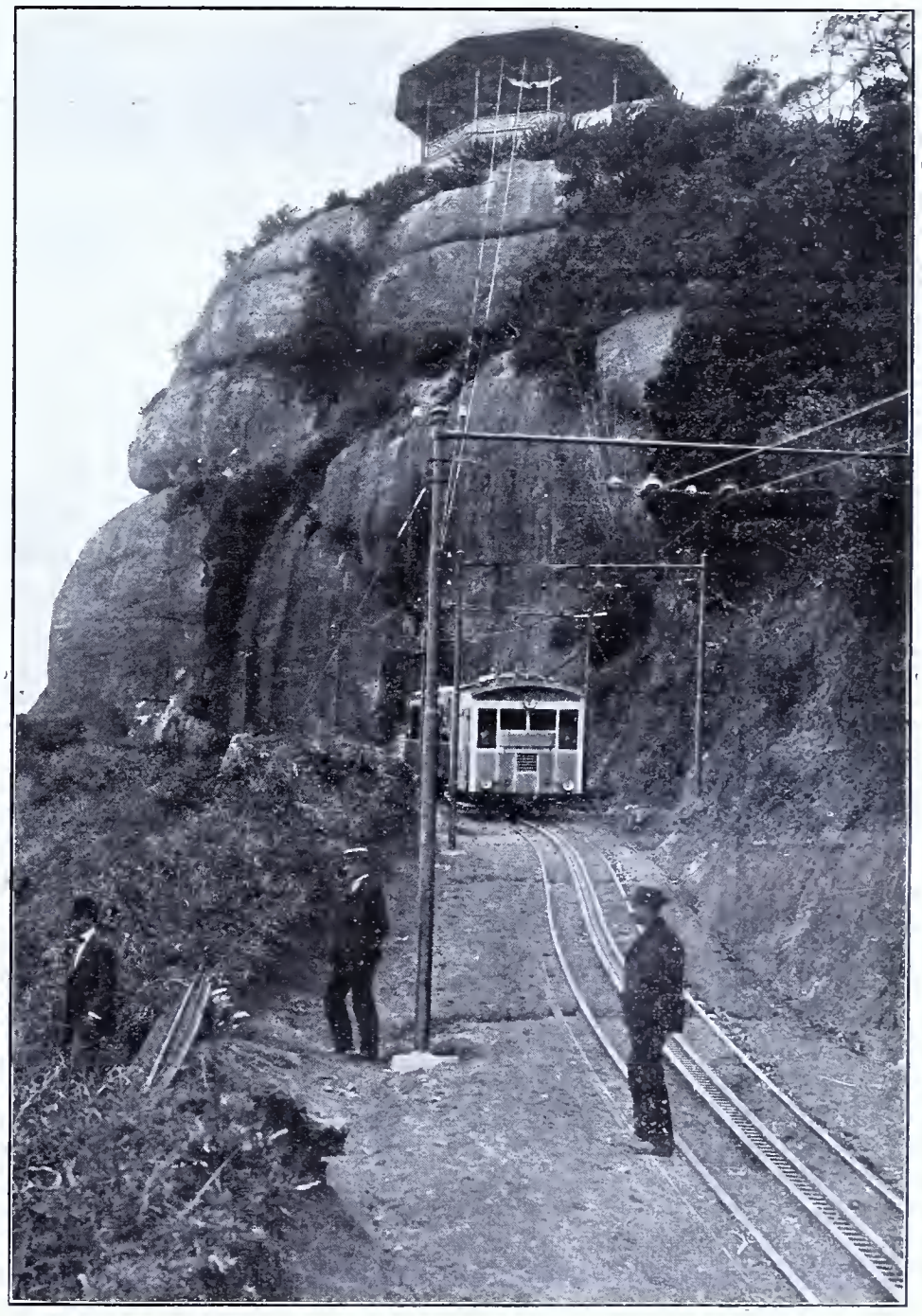


ELECTRIC LOCOMOTIVE ON CORCOVADO RAILWAY.

Owing to the heavy gradients it is necessary to use the rack-rail on the whole of the line, and the Riggenbach system is adopted. The track gauge is one metre, and between the rails are fixed two channel irons between which are riveted the teeth of the rack.

Three-phase current is used, and a special locomotive was designed for the line by the Swiss Oerlikon Company. On the roof is a double trolley which takes current from a 750-volt overhead line at a frequency of 50 cycles. Such frequency was already adopted in the local power plant, and even though it is somewhat high for traction work, it was used without any difficulty by properly designing the motors. Current is supplied by the Rio de Janeiro 50 000 horse power hydro-electric power plant, which uses a 44.000 volt three-phase power line. This line ends in a large sub-station in the suburb of the town, and the electric road under consideration takes its supply from this source. A special sub-station has been installed on the mountain, which sub-station receives a 6 300-volt current from the main plant and reduces the pressure to 750 volts for use on the double-trolley line, as already stated.

The locomotive is at the rear and pushes the car up the track, but owing to the heavy gradients it was found advisable to keep the locomotive independent of the car, and it does not support any of the weight of the latter. In designing the locomotive, the centre of gravity is brought down as



CORCOVADO SUMMIT—TERMINUS OF LINE.

near the rail as possible, and a safety grip is used under the rack rail. The truck of the locomotive carries two separate pinions which engage with the rack. For each pinion there is mounted a similar set of apparatus consisting of a three phase motor driving a countershaft by means of reduction gears. The speed reduction is from a 11.3 to 1. Each of the motors is bolted down to the top framing of the truck, so that it lies above the inside floor of the locomotive and is quite accessible. The motors have 8 poles, and normally run at 730 revolutions per minute. In the armature circuit of each motor is placed a rheostats for regulating the speed. Both rheostats are coupled together mechanically so as to be operated by a single movement of the controller handle. The two motors are always operated in parallel. Above them is mounted a sheet-iron box of large size in order to contain the resistance coils, and a good air draught for cooling the coils is provided by a motor-driven fan placed in the rear. Such air escapes at the front by a vertical flue, which runs up through the roof of the locomotive. On the front of the box are mounted various instruments and control levers.

The resistance coils also serve to absorb the energy when the car is run on the down grade, and the motors are used as generators in order to provide an electric brake. For operating the three-phase motors in this way, there is mounted a small six-pole exciter on the shaft of the rear motor in order to furnish direct current. When running under these conditions, a double-throw switch disconnects the field winding of both motors from the overhead line, and inserts the field in the direct current circuit of the exciter. In this way the three-phase motors are made to work as generators upon the resistance coil. A rheostat regulates the amount of direct current in the fields, and accordingly the amount of electric braking. Means are also provided to allow the motors to work as generators upon the line itself, in order to return energy in the usual way, but as the cost of current is quite low in the present case, this point is not one which has as much importance as on other lines. It is found that 40 to 45 per cent of the energy can be regenerated. When descending, the motors can furnish the current needed on the locomotive for the fan motor and also for the lighting.

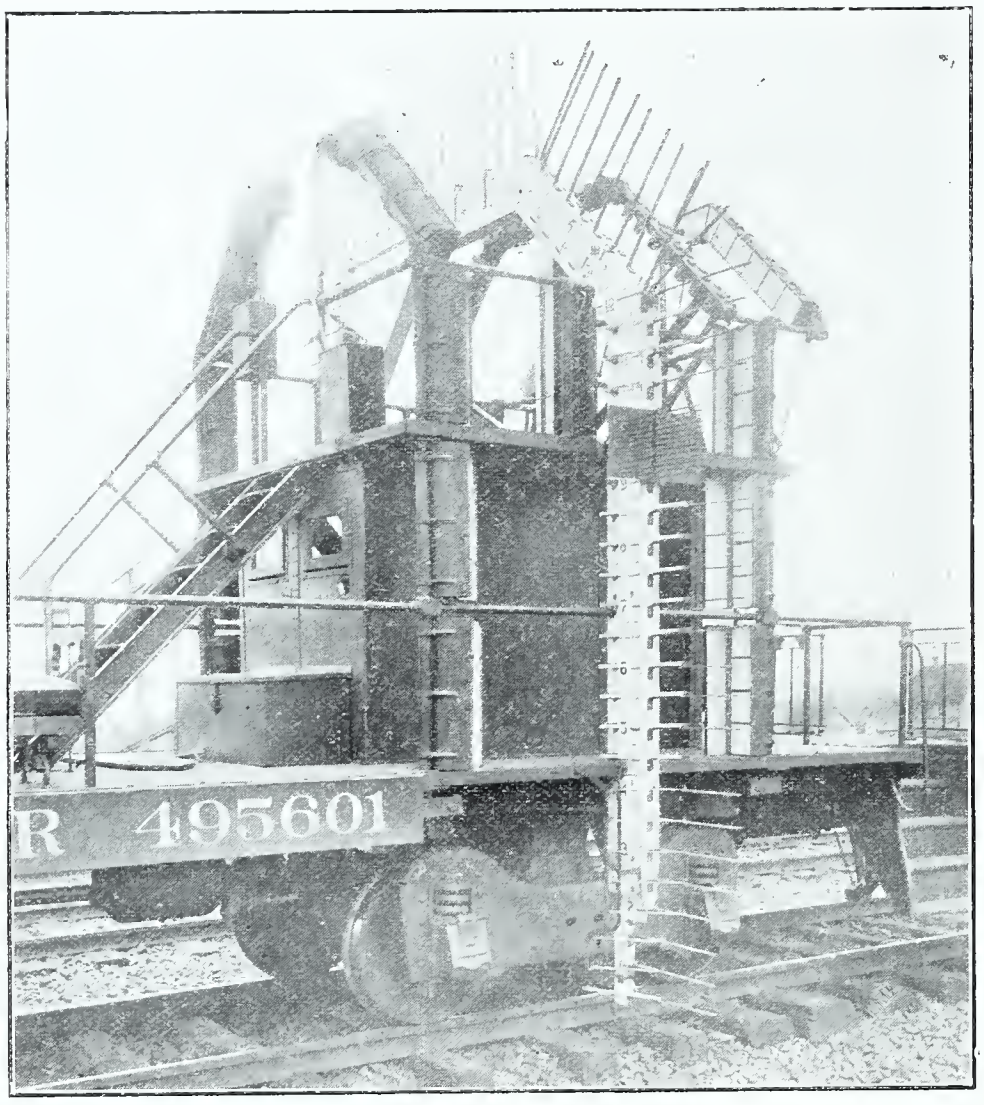
How to Get Copies of Patents.

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AN ELECTRICALLY LIGHTED CLEARANCE CAR.

THE accompanying illustration shows the construction of a most interesting clearance car, which has just been placed in operation on the Pennsylvania Railroad lines east of Pittsburg and Erie, and is designed to secure current measurements of the distance from the track to projecting portions of station buildings, tunnels, bridges, and other objects.

This unique equipment is arranged to indicate automatically while moving on curves the elevation of the rails and the degree of curvature. There is a series of electric lights enclosed in steel cylindrical boxes with translucent glass fronts facing the templets. These lights extend from the floor of the car on each side thereof to a height of 15 feet above top of rail. The well diffused electric light thus obtained makes it possible to take measurements both by day and night as well as in dark tunnels.



CLEARANCE CAR.

It may be stated that the car is 54 feet 8¾ inches long over all, and 30 feet between truck centers, and constructed entirely of steel. It is equipped with air brakes, steam fittings and electric lights, as above mentioned. The main floor is 4 feet 5¼ inches above the top of the rail, and at the front end of the car where the templets are located is a second floor at an elevation of 9 feet 8 inches above the top of the rail. Both floors are for use in taking measurements from the templets. The second floor is reached by steel stairways on each side of the main templet.

It is of interest to note that all the measurements are taken at the center of the wheel truck, from which clearances are computed. The main templet, which is erected directly over the center of the truck, has a width of 10 feet between elevations, 2 feet and 12 feet above top of rail, exclusive of the fingers attached to the sides. From an elevation of 12 feet above top of rail, the templet recedes towards the middle of the car at an angle of 45 degrees, reducing the width of the templet to 4 feet at the top at an elevation of 15 feet above top of rail.

An auxiliary templet has been placed immediately in front of the main templet. This was designed to measure overhead bridges, tunnels and other objects between elevations 17 feet and 20 feet above top of rail. This auxiliary templet has the same dimensions as that part of the main templet between elevations 12 feet and 15 feet. It is supported on a center shaft enclosed in an upright cylinder and is capable of being raised to a height of 18 feet by a crank and ratchet arrangement on the floor of the car.

It will be seen from the photograph that the fingers attached to the sides and the top of the templets are two feet long and are spaced apart. They are hinged to the templets and are held in the different positions by friction. Attached to the fingers and the side of the templet are graduated scales which indicate automatically the distance from the rim of the templet to a side or overhead object. In addition, a small board equipped with a set of fingers spaced one inch apart has been provided to measure cornices of roofs of shelter sheds or other irregular objects close to the track. This board is detachable, and can be fastened to the side of the templet at any point desired.

When the car passes over a curve, an attachment on the rear truck of the car indicates the degree of curvature on a scale inside of the cabinet which has been erected in the middle of the car. There is an instrument in this cabinet consisting of a long pendulum suspended vertically, which indicates automatically the elevation of one rail of the track over the other. The side of this cabinet facing the main templet has been provided with a plate glass window, which enables the operator of the car to read the degree of curvature or the elevation of the rail at any time.

It is maintained by the designer, who is the engineer of maintenance of way, that with all of the attachments working automatically it is possible to take clearance measurements while the car is running at a speed of four miles per hour. This is necessary at times in order to keep out of the way of regular trains.

Three men are usually employed in operating this clearance car, although two men can operate the same, one taking the readings of the scales and the other recording them.

A Memory Machine.

Machinery has taken the place of hand labor in so many fields that there seems to be no limit to its possibilities. Almost human ingenuity is displayed by some of the recent apparatus, such as the calculating devices, and they have been given the apt title "machines that think." And now comes something that represents a still longer step in the same direction, and aids that faculty that is sadly defective in so many men—the memory. Harry Bates, who is the inventor of the typewriter pay stations that are being introduced throughout the country, and of other ingenious contrivances, has devised a mechanical apparatus to keep the business man from forgetting his engagements. It is in the form of a desk fixture, six inches high and eight long, and looks like a clock with three sets of pigeon holes beneath it, one series being intended for the months of the year, one for the days of the month, and the third for each quarter of hour of the day. The busy man who wishes to be reminded of something he wants to do in the future makes a memorandum of it: but instead of putting the latter in his pocket or on his desk where it is swamped in a confusion of papers, he drops it into the proper pigeon hole. No matter whether the engagement is for a year ahead or for the next fifteen minutes, a bell rings when that particular time comes and a card drops automatically before him. The whole device is worked by a spring, and it can be filled with cards recording the various duties of the office force for an entire day. If the chief should be absent each clerk will be reminded at the proper time of just what he has to do. No alarm comes from the case unless there is a memorandum in it.

BOOK REVIEWS.

Knots, Splices and Rope Work,

By A. Hyatt Verrill,

The Norman W. Henley Publishing Co. N. Y.

A practical treatise giving complete and simple directions for making useful and ornamental knots, with chapters on pointing, splicing, serving, etc., is hereby presented. It is adapted for the use of travelers, boy scouts, and all who have to handle ropes. Few people realize, says the author, the importance that knots have played in the world's history. It might be safe to state that the real difference between civilized and savage man consists largely in the knowledge of ropework. No cloth could be woven, no net or seine knitted, no bow strung and no craft sailed without numerous knots and proper ropes. Gradually the various professions have adopted the knots best suited to their requirements, and thus we find the sailor's knot, the fisherman's knot, the weaver's knot, the builder's knot, and many others. All are described and illustrated in this booklet, making an interesting useful treatise.

House Wiring,

By Thomas W. Poppe,

The Norman W. Henley Publishing Co. N. Y.

This little volume describes and illustrates up-to-date methods of installing electric light wiring, and is intended primarily for those persons who wish to obtain a practical knowledge of the subject. It aids in solving all wiring problems, and contains nothing that conflicts with the rulings of the National Board of Fire Underwriters. It will prove of special value to apprentices, helpers and electricians, although the advanced worker will find much to interest him. It contains just the information needed for the successful wiring of a building.

Brazing and Soldering,

By James F. Hobart,

The Norman W. Henley Publishing Co., N. Y

This is number five of a series of practical papers, and tells just how to handle any job of brazing or soldering that comes along. It tells what mixture to use, and even how to make a furnace if you need one. The booklet is in its fifth edition, and includes a number of tested formulas for all kinds of solders and fluxes. It is illustrated and contains many valuable hints.

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Published monthly at Washington, D. C.,
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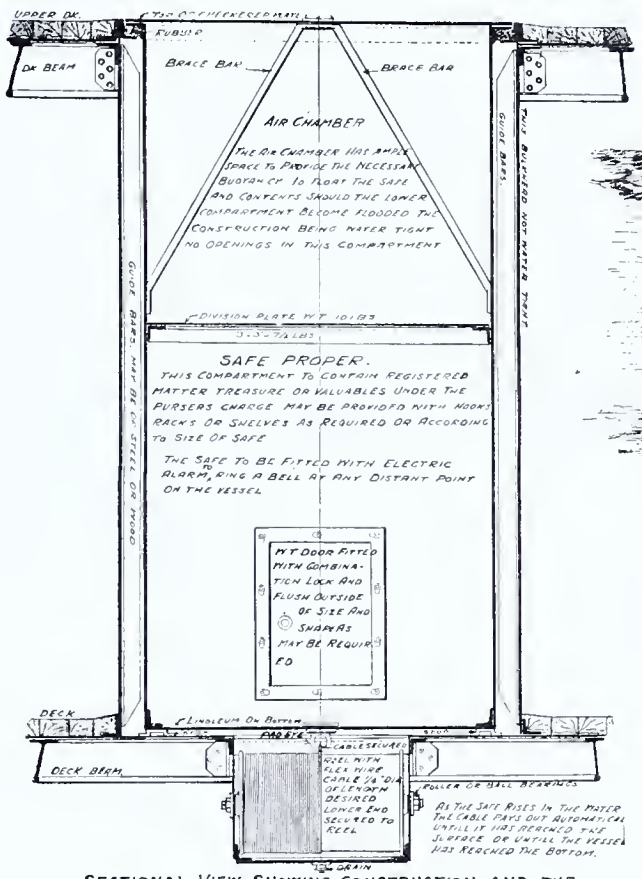
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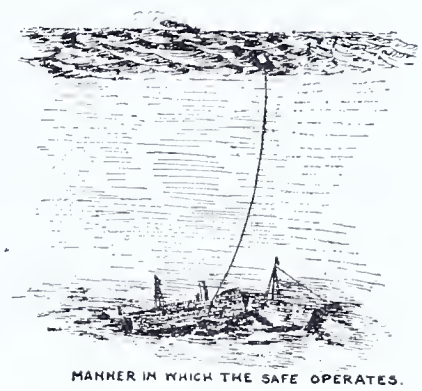
My commission expires November 16, 1916.

A BUOYANT SAFE.

Cases of loss through shipwreck have been brought to public attention of late in a striking manner, and there is a general feeling that some means should be devised to save the mail, valuable papers and money on a vessel that sinks at sea. Attempts to raise wrecks, or to reach them through the aid of divers, are only partially successful, and yet the losses, as in the case of the Titanic, are so great in money value alone, that the question well deserves the application of ingenuity. A simple and practical solution is offered in an invention made some years ago, and patented by Frank Honeck and Robert H. Hopkins of Seattle, Wasb. It consists of what is in effect a buoyant safe. It is intended that this safe will be water tight, and will be large enough to hold the ship's papers, accounts, and valuables of passengers, shall be located in the purser's cabin, underneath a movable hatchway. The upper portion of the safe constitutes an air chamber of sufficient dimensions to displace a volume of water of slightly greater weight than that of the contents of the safe. Thus, in case of injury to the vessel, tbe safe will rise through the water, displacing the hatchway above it and make its way to the surface, where it will float like a buoy and may be readily found hy searchers. The accompanying illustrations show details of construction and operation of this novel device. The upper end of the safe is tapered so as to facilitate its movement through the hatchway without danger of obstruction, and on the extreme upper end is a lug with an opening through which a rope can be passed when the safe is found floating on the water, so that it can he readily towed to the rescuing vessel. The hatchway is made in pivoted sections, designed to rise readily when the safe is lifted through the water, and to permit it to pass. The air chamber of course is made without openings, and it has ample space to provide the necessary huoyancy to float the safe and its contents, even should the lower compartment become flooded. It is intended, however, that the safe should be water tight. The lower compartment, which constitutes the safe proper, is formed like the usual receptacle of this class, and has the combination lock and electric alarm designed to give warning if any attempt is made to open it hy unauthorized persons. The hatch, which is shown in the cut as immediately over the safe, though it may be a certain distance above it, is made in two parts, the outer edges of which have pins to engage openings in the adjacent walls of the hatchway, these pins forming pivots upon which the hatch sections are mounted for movement until they are disengaged from their openings in the walls of the hatchway. When this occurs, the pins move out of the said openings to allow the hatch sections to be entirely disengaged, tbe pins and openings thus constituting a detachahle connection. On the under side of one section of the hatch are two levers, loosely pivoted, the short arms of which are arranged to engage with the adjacent edge of the hatchway when the hatch is in position and the long arms to enter openings from opposite sides. This construction acts, when the safe rises, to let the hatch he lifted from its fastenings and allow the safe to pass upwardly.



SECTIONAL VIEW SHOWING CONSTRUCTION AND THE INSTALLATION ON BOARD SHIP.



MANNER IN WHICH THE SAFE OPERATES.

It will thus be seen that in case of the sinking of the vessel, the safe and its contents will float upwardly and be saved. It will also serve to mark the location of the vessel—often a matter of considerable doubt. It will be remembered that in the official investigations of the sinking of the Titanic, it was found that even if the ship had not sunk in too deep water for any hope of salvage, it would be impossihle to positively locate the spot of the wreck. A discrepancy in the latitude and longitude given in the calls for help over the wireless led several of the vessels that hurried to the rescue astray, and caused them to hunt blindly in the fog for hours. Even the boats containing the survivors offered no definite clue to the location of the ship, as many of them were scattered over a wide area, the currents having carried them an unknown distance from the scene of disaster. Although the treasure carried by the ill-fated boat was estimated at millions of dollars, experts were unanimous in declaring that it was utterly futile to attempt to find it. The proverhial search for the needle in the hay stack would have been an easy task in comparison. With the aid of this new device, however, the matter would be made simple. A wire of any desired length could be connected with the bottom of the safe and also with some part of the ship, and could be arranged to uncoil as the safe rose through the water, so that wben the safe had reached the surface, one might be able to tell positively where the wreck lay hidden in the depths of the ocean.

A Water Automobile.

A really practical water automobile has solved one of the hardest problems incident to the draining of the Everglades of Florida: that of running the survey lines through the vast swamp. The machine, which is described in *Popular Mechanics*, was designed by the State Engineer. So slow and painful was the work of running the lines to mark the great canals intended to drain the Everglades, that the engineer was almost discouraged. Then he put his wits to work, determined not to be beaten by a lot of water and a few million acres of soft black mud, and the result is the water automobile. The machine was not built for beauty or speed, and it moves at the rate of only three miles an hour, but it does the work. It consists of a framework of light steel and oak, 25 feet long and eight wide, mounted on three wheels, the two in front being of iron and very wide rimmed, so as not to cut into the soft mud over which the machine has to pass. The rear wheel is a large wooden roller or drum, designed to crush down the tall saw grass as the craft proceeds. Surrounding the framework and only a few inches above the ground is a large air-filled steel cylinder, which keeps the machine afloat while crossing sheets of water. In the "bow" of the craft is a gasoline engine, which transmits power to the front wheels when the machine is crossing surfaces on which the wheels may be driven, or to an ordinary screw propeller, such as is used on motor boats, for propulsion through the water. This propeller is under the machine, back of the front wheels, well out of the way when the machine is traveling as a land automobile.

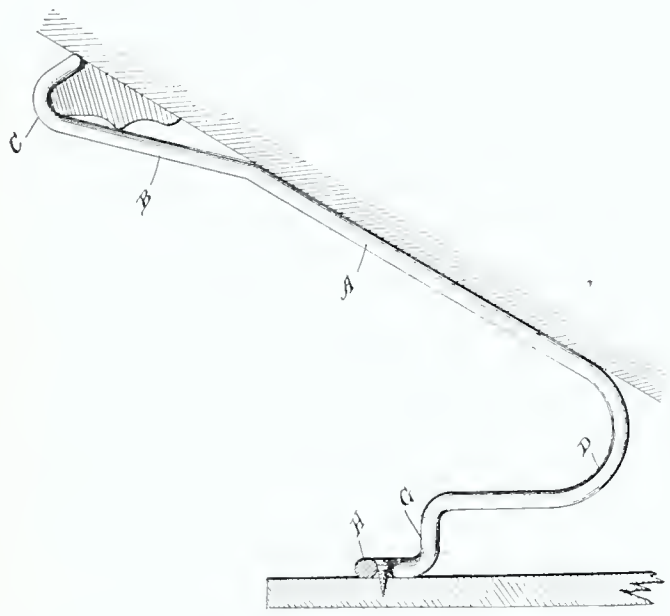
On the framework of the machine is a platform, strong enough to hold a score of men. Here the engineers and surveyors work, eat and sleep, an awning keeping off the rays of the sun. Two men are required for operating the machine, which is doing in a few hours work that formerly required a week.

CLEVER NEW PATENTS.

PICTURE SUSPENSION BAR—FACE PROTECTOR—CORN CUTTER—SCOOP.

Picture Suspension Bar.

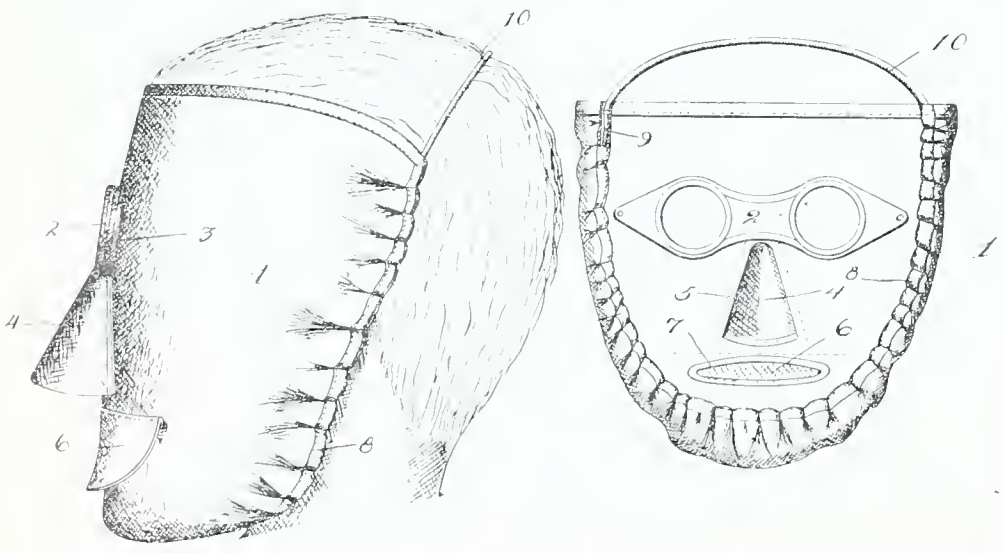
Housekeepers who have struggled to adjust pictures in place on walls, and have suffered loss through mirrors falling on account of worn cords and twisted wires, will welcome a device invented by Reuben S. Cormier, of New Bedford, Mass. This does away entirely with the use of such appliances. As will be seen from the cut, the inventor employs a strip of metal (either rod or sbeet metal) formed at its upper end with a hook to fit over the picture rod.



The strip runs downward and inward, and from this angular portion *B* extends a long vertical portion *A*, formed at its bottom with a large curved loop *D*, the loop terminating at its upper portion in a right angled portion *C*, the inclined terminal of which is formed with an eye *H* to receive a screw for connecting the device with the picture frame. The device as a whole is secured to the picture frame in a rigid and vertical position, and tbe loop and the right angled terminal give the proper angular position to the picture, while the vertical main bar rests on the wall and offers a broad, firm support, bringing the suspension hook in the exact place to engage tbe picture rod. By means of this device the picture or mirror can be instantly hung in tbe proper place and cannot cbange its position, but can be readily removed when desired. The picture itself can be supplied with the hanger applied at a small expense, and the device offers a simple and practical substitute for the screws, cords, and other parts of tbe hangers now used.

Face Protector.

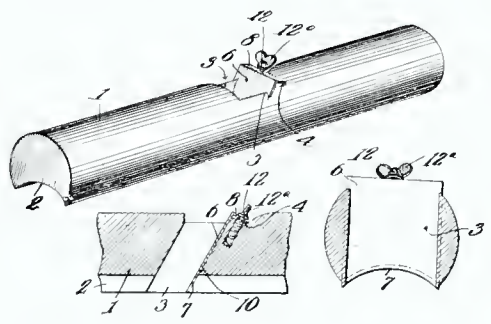
Motormen, chauffeurs and others wbo are obliged to be out of doors in swift motion in cold and stormy weather, suffer particularly in tbeir faces, which are exposed no matter how well the rest of the body may be protected. A mask which will protect the wearer's face and ears, and at the same time remain in place without discomfort, has been patented by Oscar H. McQuary, of Lawrence, Kans. The mask, which is made of rubber, leather or cloth, bas goggles set into the same, a nose sbield and a mouth piece, so as to enable the wearer to breathe witbout difficulty. The lower edge of the mask bas an elas-



tic puckering string to insure close fitting under the chin, and another elastic string goes back of the head, holding the mask in position. It is obvious that wben this device is adjusted, the entire face of the wearer, including his ears and chin, is well covered and protected from the weather. The goggles enable him to see, and the openings for the nose and mouth, with the shield and bib over said openings as shown in tbe drawing, enable him to respire. Furthermore, as tbe inner face of the protector is uninterrupted, the passage of air from the nose and moutb holes to the goggles and other parts of the interior is unimpeded, so that tbe moisture laden air within the mask is carried away and tbe goggles kept clear.

Corn Cutter.

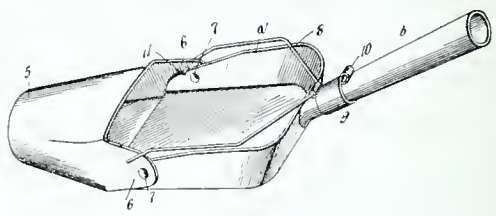
Corn is king among our crops and the chief factor in our agricultural prosperity. There is a constant tendency to lessen the amount of hand labor that must be given to this crop, and the latest is a device to strip the grains of corn from the ear, and to extract the juice wbich lies adjacent the cob. It has been patented by George S. Elliott, of Mobile, Ala. As shown in the drawings, which show not only a perspective but a trans-



verse sectional view and a longitudinal view in part, tbe body of the implement is made preferably out of a bar, curved to accomodate tbe hand of the operator. The concave channel receives the ear of corn. The slot 3 which extends through tbe body has a transverse seat 4, and in slits 5 slides a blade 6, tbe edge of which is concaved to fit the groove or channel. Tbe blade has a resilient flange overhanging the seat 4, and in this flange is an opening which bears against the seat adjacent tbe free edge of the flange only, the rest of the flange being spaced from tbe seat. A screw threaded into the body engages the flange 8, and wben the screw is rotated to enter the body, its head presses the flange down on the seat 4, the elongated opening permitting the necessary relative movement between the flange and the body of the screw. This manipulation of the screw advances the cutting edge of the blade, so that it will assume the proper position with respect to the cbannel. A cutter constructed as above removes the grains of corn from the ear with rapidity, the juice being removed as well. Since tbe flange is resilient, as soon as the screw is loosened the edge of the blade will be automatically retracted.

Scoop.

When it is desired to fill a bag with flour, sugar or the like, it is customary to first arrange a funnel in the bag, and then hold the funnel and bag together with one hand while the material is scooped into it with the other. This is a clumsy and inconvenient method, and a recent patent is intended to offer something better. Stanley V. Morrill, of Benton Harbor, Mich., has invented a combined funnel and scoop, as shown in the cut. The mouth of the funnel is flared and large enough to admit of the insertion therein of the front end of tbe scoop. The mouth may be circular or rectangular, as desired. The lugs 6-6 on opposite sides of the mouth of the funnel bear on the sides of the scoop, and the pivot pins 7-7 which pass through the sides of the scoop and tbe lugs, are positioned at such distances from the front end of the scoop as to permit the



scoop and the mouth of the funnel to be moved into and out of alinement with each other. When tbe funnel is raised, tbe scoop may be easily filled when dipped into flour or sugar, and when the funnel is lowered and inserted into the bag and the scoop is tilted, the material in the scoop will fall into the funnel and be conveyed into the bag. To facilitate the adjustment of the funnel, a yoke 9 is used, and by turning in the arms thereof tbrough openings in the lugs and connecting the yoke with a slide on the handle, the operator can, by pressing with his thumb on the finger piece 10, move tbe funnel up or down. The ends of tbe yoke form stops to limit the movements of tbe funnel.

PATENTS

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LATEST COURT DECISIONS IN PATENT, COPYRIGHT AND TRADE-MARK CAUSES.

WM. WRIGLEY, JR., CO. v. L. P. LARSON, JR., CO. et al.

(Circuit Court, N. D. Illiniois, E. D. Nov. 20, 1911. 195 F. R. p. 568.)

TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION—IMITATION OF PACKAGES.

Defendants, who make a chewing gum sold under the name "Peptomint," held to have so closely imitated the boxes and packages of complainant containing "Spearmint" gum, especially in the style and arrangement of the symbols and lettering and in the colors used, which include red, green, and white, as to indicate a studied intention to deceive retail purchasers and to entitle complainant to a preliminary injunction, although there were such differeuces that dealers would not be misled.

CONSOLIDATED RUBBER TIRE CO. et al. v. B. F. GOODRICH CO.

(District Court, N.D. Illinois, E. D. April 11, 1912. 195 F. R. p. 764.)

1. PATENTS—TITLE—ASSIGNMENT.

An assignment of the right to a patent pending the application and before its issuance vests the title in the assignee, although it is issued in the name of the assignor.

2. EVIDENCE — PROOF OF ASSIGNMENT — SECONDARY EVIDENCE.

Proof that an assignment of a patent was used in evidence in other cases, and that it caunot be found, held sufficient to authorize the introduction of a certified copy of the record thereof in the Patent Office.

3. PATENTS — SUIT FOR INFRINGEMENT—TITLE TO SUPPORT.

Where an assignment of the right to a patent, application for which was pending, did not give the number of the application nor otherwise identify the same except by stating the general subject-matter, a subsequent assignment by the inventor executed more than a year after the patent was granted to the same assignee and describing the patent, without proof that no previous assignment had been made to another, is not sufficient to establish the right of the assignee to maintain a suit for infringement.

4. PATENTS — INFRINGEMENT—SUFFICIENCY OF PROOF.

A bill for infringement of a patent is not sustained by evidence of the sale of any number of the elements of the patented structure less than the whole, where there is no allegation or proof of contributory infringement, nor as to when the sales were made, and especially where the suit is in a district in which neither party resides, so that the matter is jurisdictional.

LOVELL-McCONNELL MFG. CO. v. AMERICAN EVER-READY CO.

(Circuit Court of Appeals, Second Circuit. March 15, 1912. 195 F. R. p. 931.)

TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION — IMITATION IN APPEARANCE AND FORM OF ANOTHER'S GOODS.

A manifest imitation iu details of construction by one manufacturer of an article made by another, with a consequent likelihood of confusion, should be enjoined, unless the points of resemblance are the necessary result of an effort to comply with the physical requirements essential to commercial success.

WOLFF TRUCK FRAME CO. v. AMERICAN STEEL FOUNDRIES et al.

(Circuit Court of Appeals, Seventh Circuit. Jan. 2, 1912. Rehearing Denied March 29, 1912. 195 F. R. p. 940.)

1. PATENTS—VALIDITY-SUFFICIENCY OF DESCRIPTION — ADMISSIBILITY OF PAROL EVIDENCE.

Where a mechanical patent does not disclose on its face the real invention of the patentee, but the element of the combination in which only such invention resides, although described and claimed and shown in the drawings, in combination with the other elements shown, and so far as appears from the specification and claims, is wholly without use or function, it cannot be aided by the oral testimony of the patentee explaining the problem to be met and how he solved it, although such testimony shows that he made an actual invention of merit.

2. PATENTS—VALIDITY—CAR TRUCK.

The Hardie patent, No. 569,044, for a metallic car truck, is void because it does not disclose the actual invention which was of a truck adapted for use with any bolster then known, and especially the type having column guides, whereas such feature is nowhere explained, nor is it necessary or useful with the type of bolster shown in the drawings.

HALL v. FRANK et al.

(Circuit Court, E. D. New York. April 18, 1912. 195 F. R. p. 946.)

1. PATENTS—VALIDITY AND INFRINGEMENT-BEDSTEAD FASTENING.

The Hall and Tilley patent, No. 625,164, for a bedstead fastening, for securing the spring section of a metal bedstead, in which the side bars are rigidly connected by means of the spring frame to the end pieces or post sections, discloses patentable invention, but, in view of the prior art, must be narrowly construed and limited to the exact combination shown. As so limited, held not infringed by the device of the Frank patent, No 650,311.

2. PATENTS — SUIT FOR INFRINGEMENT — LACHES.

A delay of nine years by the owner of a patent, after having knowledge of the manufacture and sale of a claimed infringing article, before bringing suit, constitutes such laches as will defeat the suit, unless excused; and it is not a sufficient excuse that complainant was prevented from sooner bringing the suit by his partner in the ownership of the patent.

BURDETT-ROWNTREE MFG. CO. v. STANDARD PLUNGER ELEVATOR CO.

(Circuit Court, E. D. Pennsylvania. Dec. 13, 1911. 196 F R. p. 43.)

PATENTS—VALIDITY AND INFRINGEMENT—ELECTRIC ELEVATOR.

The Rowntree patent, No. 666,699, for a signaling system for electric elevators, which enables a single person at the motor to control their movement, covers a new combination and arrangement of known elements, resulting in greatly improved operation and discloses patentable invention. Also held infringed.

AUTO SPRING REPAIRER CO. v. GRINBERG et al.

(Circuit Court, S. D. New York. Jan. 6, 1912. 196 F. R. p. 52.)

1. PATENTS—SUIT FOR INFRINGEMENT—DEFENSES—ESTOPPEL.

A license given by the owner of a patent to defendants, on a sale to them of a job lot of parts used in making the patented article, to finish up such parts into completed articles and market the same, does not estop defendants from contesting the validity of the patent, when sued for infringement by making the patented article as a whole after the parts sold had all been used.

2. PATENTS—INVENTION—AUTO SPRING REPAIRER.

The Petze patent, No. 899,468, for an auto spring repairer for emergency use, in view of the prior art, is void for lack of invention.

3. PATENTS — SUIT FOR INFRINGEMENT — RIGHT OF ASSIGNEE TO SUE FOR PRIOR INFRINGEMENTS.

An assignment of a patent in the usual form does not convey to the assignee the right to recover damages for prior infringements.

YALE & TOWNE MFG. CO. v. RESTEIN et al.

(Circuit Court, E. D. Pennsylvania. May 2, 1912. 196 F. R. p. 176.)

TRADE-MARKS AND TRADE-NAMES — NAME OF PATENTED ARTICLE—EFFECT OF EXPIRATION OF PATENT.

On the expiration of a patent, any one has the right to make and sell the patented article, and to use in connection therewith an arbitrary name by which it was known to the public, provided he takes proper care to prevent his own goods from being confused with those of the original manufacturer, and it is sufficient to somewhat change the name and add his own name and place of manufacture.

WEED CHAIN TIRE GRIP CO. et al. v. CLEVELAND CHAIN & MFG. CO.

(Circuit Court, N. D. Ohio, E. D. August, 1910. 196 F. R. p. 213.)

PATENTS-INFRINGEMENT-CHAIN TIRE GRIP.

The Parsons patent, No. 723,299, for a chain tire grip for automobile wheels, conceding its validity, held infringed on a motion for preliminary injunction by a chain grip made and sold by defendant constructed substantially like that of the patent, but with which defendant supplies to purchasers two chain straps to secure the grip from traveling around the wheel, with a circular instructing them to attach such straps, which instructions purchasers may or may not follow; the grip being capable of use without them.

PARKE-DAVIS & CO. v. H. K MULFORD & CO. (two cases).

(Circuit Court of Appeals, Second Circuit. April 22, 1912. 196 F. R. p. 496.)

1. PATENTS-VALIDITY AND INFRINGEMENT—ADRENALIN.

The Takamine patent, No. 730,176, for a glandular extractive product commercially known as "adrenalin," claim 1, which covers "a substance possessing herein described physiological characteristics and reactions of the suprarenal glands in a stable and concentrated form and practically free from inert and associated gland tissue," as well as claim 2, 9, 11, 12, and 14, all of which contain a refcrence to "associated gland tissue," construed in the light of the specification, must be limited to a substance possessing the described characteristics and reactions the constituents of which, or some of them, were at one time associated with suprarenal gland tissue. As so construed, all of said group of claims held valid and infringed. Claims 6, 12, and 15, which do not contain such limitation, not passed upon.

2. PATENTS — VALIDITY AND INFRINGEMENT—SALT OF ADRENALIN.

The Takamine patent, No. 753,177, for a glaudular extractive compound which deals with a salt of the product covered by the Takamine patent. No. 730,176, claims 5 and 6, which are expressly limited to a compound of an acid and "the herein described product of the suprarenal glands," held valid and infringed. Claims 1 and 2, which are without such limitation, not passed upon.

MEAD MORRISON MFG CO. v. EXETER MACHINE WORKS.

(District Court, M. D. Pennsylvania.) 196 F. R. p. 789.)

1. PATENTS—VALIDITY-RECITALS OF PRIOR ART.

Recitals of the prior art in the specification of a patent can no more be taken as conclusive to negative novelty and invention than the claims of novelty and invention therein to establish the same.

2. PATENTS — VALIDITY.

Where a patented device consists of an organized mechanism, the beneficial results secured by the invention cannot be ascertained by a scrutiny of the patent specification in the light of common popular knowledge.

3. PATENTS-VALDITY-TESTS OF INVENTION.

The presence of patentable invention or its breadth or importance does not depend on the mere extent or completeness with which the inventor has modified or altered existing devices, but rather on the new and beneficial result accomplished in its particular art.

4. PATENTS—INVENTION—HOISTING APPARATUS.

The Norris patent, No. 722,613, for improvements in hoisting apparatus for unloading coal, is not invalid on its face for lack of patentable invention.

FRASER v. DUFFEY et al.

(Circuit Court, D. Massachusetts. Feb. 26, 1912. 196 F. R. p. 900.)

1. PATENTS—VALIDITY AND INFRINGEMENT-SHOE LAST.

The Taylor patent, No. 601,622, for a shoe last, comprising a fore part and a heel part connected by a pivot to enable said parts to have a relative movement for shortening the last, said pivot being located in or above the line of pressure between the toe and heel tending to collapse said last, was not anticipated, discloses invention, and is valid, the invention being one of great utility; also held infringed.

2. PATENTS — SUIT FOR INFRINGEMENT — TITLE TO SUSTAIN.

A prima facie record title to a patent through assignments duly executed and the validity of which is not questioned by any of the parties thereto is sufficient to sustain a suit for infringement.

3. MONOPOLIES—EFFECT ON RIGHT TO SUE FOR INFRINGEMENT OF PATENT.

That the complainant is a member of an illegal combination in restraint of trade is not a defense to a suit for infringement of a patent.

AEOLIAN CO. v. ROYAL MUSIC ROLL CO.

(Circuit Court, W. D. New York. June 15, 1912. 196 F. R p. 926.)

COPYRIGHTS—MUSICAL COMPOSITIONS—RECORDS FOR MECHANICAL PRODUCTION—PIRACY—"PERSON AGGRIEVED."

Copyright Act March 4, 1909, c. 320, § 1e, 35 Stat. 1075 (U. S. Comp. St. Supp. 1911, p. 1472), gives the owner of a copyright for a musical composition the exclusive right to make or license another to make perforated music rolls or records for mechanically producing such composition, subject to the condition that, if he shall make or authorize the making of such records, any other person may make similar use of the work on payment of a fixed royalty. The right so given to a subsequent maker, however, does not authorize him to copy the record of the first maker, but his work must be done from the original composition, and under section 26 of the act, which authorizes a suit in equity by any person aggrieved to enjoin the violation of any right secured thereby, the original maker, whether the proprietor of the copyright or his licensee, is entitled to an injunction to restrain such copying or reproduction of his records.

AMERICAN CHICLE CO. v. W. J. WHITE CHICLE CO. et al.

(Circuit Court, W. D. New York. June 7, 1912. 196 F. R. p. 977.)

1. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION — USE OF NAME—CONSTRUCTION OF CONTRACT.

Where a contract, conveying the business, good will, and rights of a manufacturer of chewing gum, and binding the sellers not to engage in business for 10 years, made no meution of the name of the sellers which had previously been used on the packages of gum sold, in connection with names adopted for the different brands, the question whether they were precluded from using such name iu a similar business after the expiration of the 10 years is not sufficiently clear to entitle the purchaser to a preliminary injunction to restrain such use.

2. TRADE-MARKS AND TRADE-NAMES—UNFAIR COMPETITION-IMITATION OF DRESS.

Defendants held, on the showing made, to have intentionally imitated packages, dress, and advertisements of chewing gum made and sold by complainant to such extent as to constitute unfair competition and entitle complainant to an injunction.

AMERICAN LAUNDRY MACHINERY CO. v. ADAMS LAUNDRY MACHINERY CO.

(Circuit Court, N. D. New York. June 10, 1912. 197 F. R. p. 51.)

PATENTS—INFRINGEMENT-CLOTHES DRIER.

The Barnes patent, No. 684,776, for a clothes drier, in view of the limitations imposed by the language of the claims as allowed and the prior art, must be confined to a drying room having heating-coils on its sides only and the central part of the room under the conveyer devoid of efficient heating-coils, and is not infringed where coils furnishing substantial quantity of heat are placed in the center of the room beneath the conveyer.

DAVEY et al. v. CUTTER et al.

(Circuit Court, D. New Jersey. June 17, 1912. 196 F. R. p. 178.)

PATENTS—VALIDITY AND INFRINGEMENT—PROCESS OF TREATING WOUNDS IN TREES.

The Davey patent, No. 890,968, for a process of treating and dressing a bruise or wound in the trunk or live branch of a live tree, an essential feature of which is a watershed groove on the top and sides of the cavity made in the tree to prevent the entrance of water back of the cement used in filling such cavity, discloses invention and is valid: also held infringed.

MECHANICAL INVENTIONS

Patents for which have been procured through the Patent Soliciting Office of E. G. Siggers, Patent Lawyer, Washington, D. C.

Henry E. Aastrom, Nicollet, Minn. Draft Equalizer.—The object of this invention is to provide a draft equalizer for use on buggies and other vehicles and adapted to offset the shafts from the usual central position to one side of the same so as to permit a horse to travel in the left hand track, the singletree being arranged within the contour of the shafts, with the pivotal connection approximately in line with the center of the vehicle, thereby eliminating all side draft. It comprises a pair of shafts having a cross bar and provided with offset thill irons, a divided singletree arranged on the said cross bar within the contour of the shafts and composed of two oppositely movable sections pivoted at spaced points intermediate of the ends of the cross bar, the pivots of both sections being arranged at one side of the center of the cross bar, and equalizing devices connecting the ends of the sections of the singletree to cause them to move simultaneously in opposite directions.

George W. Burton, Austin, Texas, inventor; Deacon O. Patton & Vesper V. Warwick, Austin, Texas, assignees. Cotton Chopper.—It is the aim of the invention to provide a cotton chopping machine equipped with adjustable chopping mechanism and controlling means adapted to permit the operator, while driving the machine along a row of plants, to raise and lower the chopping mechanism and adjust the same horizontally to operate properly on crooked rows, and also enabling the speed of the cotton chopping mechanism to be varied to suit the character of the crop, so that the desired number of plants may be left standing in both thick and thin rows. The cotton chopper comprises an axle, a tongue connected with and supported by the axle, spaced guides depending from and pivotally connected with the tongue and arranged to swing transversely of the machine, a hanger slidably connected with the guides, cutting mechanism mounted in and carried by the hanger, gearing operated by the axle for rotating the cutting mechanism, and means for oscillating the guides and for raising and lowering the hanger.

Wm. W. Chambers, Indianapolis, Ind. Poultry Fountain.—This invention has for its object to provide a device designed particularly for watering chickens, and capable of maintaining a continuous supply of water in a sanitary condition, and of automatically feeding the water as it is consumed by the poultry. The poultry fountain comprises a pan having a bottom and upwardly extending walls, a support consisting of a top elevated above the bottom of the pan and having a depending threaded socket adapted to screw on the threaded neck of a Mason jar or other receptacle, and supporting walls having outlet openings and spaced from the walls of the pan and also from the socket.

Jesse D. Coney, Williamsport, Pa. Two patents.—The first patent relates to a reenforcing extension chuck for felt and cork polishing cones and other polishing devices, such as brush wheels, the object of the invention being to provide for use on dental and jeweler's lathes an extension chuck adapted to hold tightly a polishing cone of felt, cork or other material, and of reenforcing and preventing the cork or other polishing cone from breaking out at the sides. The invention consists of a substantially cup-shaped socket, and a tapered threaded chuck member extending through the bottom of the socket and projecting into the latter and arranged to expand the polishing device within the socket.

The second patent covers a dental polishing device capable of use in the hand piece of an ordinary dental engine, and adapted to hold a quantity of abrasive or polishing material to facilitate the application of the same to the teeth operated on. The invention comprises a socket, a polishing head having a shank fitted in the socket and held against the wall thereof, a mandrel abutting against the interior of the inner end of the socket, and a fastening device connecting the mandrel with the socket and extending into the same and into the shank of the polishing head. The polishing head has its outer end face formed with a cup-shaped recess adapted to hold polishing material.

William H. Danner, Lagrange, Ind. Sliding Door.—The object of the invention is to provide a sliding door adapted to be substituted for an ordinary single or double sliding door, and capable of being moved either to the right or to the left and of exposing the entire door opening or only the upper or lower portion thereof. The sliding door includes upper and lower sections movable simultaneously or independently in either direction, hangers arranged in pairs and secured to the upper and lower door sections and provided in their ends with wheels arranged on the track bars, horizontal rollers mounted at opposite sides of the bottom of the door opening and engaging the outer face of the lower door section, and stops spaced from opposite sides of the door opening and limiting the downward movement of the upper door section and retaining the lower door section in engagement with the horizontal rollers.

Philip C. Emanuel, Bennetsville, S. C. Two patents.—Each patent has for its object to provide a device designed for pulling out of the ground driven pump pipes, when it becomes necessary to remove the same for renewing the point or screen or for any other purpose. It is adapted to be operated by hand at the surface of the ground, and enables a pump pipe to be easily removed in sections without liability of crushing or otherwise damaging the pipe. The invention of the first patent comprises a tubular shield provided at intervals with lugs, means for detachably connecting the tubular shield to a pump pipe, a cross head movable along the tubular shield and provided with means for engaging the lugs thereof, and an operating lever for lifting the cross head.

The device of the second patent comprises upper and lower cross heads having pipe receiving openings, means for connecting the upper cross head with the pump pipe, opposite ratchet bars connected with one of the cross heads and engaging the other cross head, and a lever co-operating with the lower cross head to lift the same.

Joseph E. Harrison, Harvey, N. D. Separator for Boilers.—The object of this invention is to provide an attachment adapted to be placed within the steam dome of a boiler without necessitating any alteration in the arrangement of the throttle valve of the steam pipe, and adapted to eliminate the effect of a direct draw of steam from the water within the boiler, and capable of insuring a uniform distribution or consumption of the steam, and of supplying dry steam to the throttle valve and thereby preventing water from entering the cylinders and valve casings. The separator consists of a support arranged at the lower portion of the steam dome and forming a closure for the same, and a plurality of independent steam tubes of relatively small diameter piercing the support and extending therefrom to the upper portion of the steam dome and forming passages for the steam.

Ernest K. Hamilton, Kilgore, Texas. Two patents.—The first patent relates to an automatic safety attachment for air brakes adapted to be readily applied to the trucks of locomotives and all kinds of cars, and capable of preventing bad wrecks in the case of the derailment of any one of the wheels of a train, by automatically applying the air brakes to the entire train. The invention comprises a pipe section connected with the train pipe and extending laterally therefrom to one side of the truck and provided with a valve having an operating member, a depending hanger located at the opposite side of the truck, and a transversely disposed operating lever fulcrumed at an intermediate point and having inner and outer arms, the inner arm being connected with the operating member of the valve and the outer arm being loosely arranged in the hangers and extending to a point above the adjacent rail and adapted to contact with the same in the event of a derailment.

The object of the invention of the second patent is to provide a gas gun, which will be powerful, smokeless and positive in its operation and adapted to reduce the expense and lessen the danger of firing guns, and capable, after a projectile or shell has been placed in the barrel of the gun, of automatic operation to supply a charge of explosive fluid to the breach of the gun and of compressing such explosive, thus igniting the charge within the barrel after the same has been compressed. The gas gun comprises a barrel, means for supplying the same with a charge of explosive aeriform fluid, mechanism movable within the bore of the barrel for compressing the charge between it and the projectile, and means for exploding the charge.

George Kraft, Nashua, Iowa. Lubricator.—This invention has for its object to provide a lubricator designed particularly for use on locomotives, and adapted to produce a steady dropping or flow of oil, which will not be affected by variations in the cylinder pressure, whereby a proper operation of the lubricator is insured under all conditions of the running of a locomotive, whether light or heavy or on a level or grade. Another object of the invention is to provide means for preventing condensation of steam in the sight glass tube from interfering with or affecting a clear view of the dropping of the oil from the oil reservoir, so that the engineer may see at all times whether the lubricant is working properly. The lubricator comprises an oil reservoir provided with a sight glass tube and having inlet and outlet passages extending therefrom, the inlet passage communicating with the oil reservoir, a condenser located above and communicating with the reservoir, a steam inlet pipe connected with the condenser and with the boiler pressure steam pipe, a steam and oil outlet pipe connecting the said outlet passage with the boiler pressure pipe, and a reduced steam pipe connecting the steam inlet pipe with the sight glass tube and having a section extending into the steam inlet pipe at a point beyond the condenser.

Samuel L. Moser, Upper Sandusky, Ohio. Two patents.—The first invention relates to an alimentary product in the form of a flaked grain, and also to the process of manufacturing the same, the invention having for its object the making of a food product which retains all the natural properties of the grain and is so treated as to have highly nutritive and laxative qualities by the retention of all of the bran, and at the same time be pleasing to the taste. The invention consists in boiling the whole wheat a sufficient length of time to soften the particles thereof without, however, breaking the outer shells. After the grain is drained and while still partially warm, butter or other equivalent edible oil is applied thereto, the heat causing the butter or oil to evenly spread over the wheat grains and to come directly into contact with the bran. Salt, sugar, or the like may be added at this stage to improve the taste, and thereafter the grains, while either warm or cold, are passed between rolls for crushing and forming the grains into flakes. During this crushing operation, the rolls are supplied with Graham, wheat or other flour for the double purpose of insuring an efficient crushing operation, maintaining the grains in individual flake form, and coating the flakes with flour so that the resultant product will be more nutritious by the addition of the Graham or other flour, and the flakes will not adhere to the rolls during the rolling operation. Graham flour is preferred because it adds to the laxative property of the product. The flour coated and flaked product is put in trays in a comparatively thick layer and placed in an oven for roasting, the trays receiving a gentle motion to agitate the flakes, or an occasional stirring.

The invention of the second patent relates to a crushing mill adapted for carrying out the foregoing process, and for producing a flaked breakfast food. The invention is of a simple character, so that it may be operated by a farmer or a housekeeper, to permit the food to be prepared directly from the whole wheat grains. It consists of a pair of crushing rolls geared together, and an improved hopper whereby the rolls may be automatically coated with Graham or other flour continuously during the feeding to the rolls of the grain to be flaked, there being a flour sifting means for supplying the flour to the rolls. The hopper is disposed above the pair of crushing rolls, being open at the top and bottom. A removable partition in the hopper divides the same into central and end compartments. Removable sifter plates extend across the lower end of the end compartments with the lower edges in contact with the partition. Means are provided for actuating the sifter plates, said means consisting of an oscillatory agitator mounted on the hopper and having oppositely-extending arms engaging said plates for actuating the same. This actuating means is operated from the crushing rolls.

William McCullough, San Antonio, Texas, inventor; Oliver Summerfield, El Paso, Texas, assignee. Mandolin.—This invention contemplates the use of an animal skin possessing certain characteristics for the formation of the bowl of the instrument. The mandolin comprises a bowl of the armor-like carapace of the armadillo, with a sounding board united at the edges to the edges of the carapace, a tail block secured in the bowl in the tail opening of the carapace, and a neck having one end secured in the head opening of the carapace. The neck and tail blocks are of the ordinary construction, and the sounding board is made of wood or some other resonant material.

NEW PATENTS FOR SALE.

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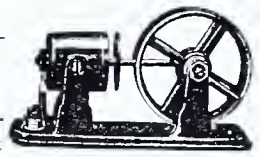
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WASHINGTON, D. C., DECEMBER 1, 1912.

THE VALUATION OF PATENTS.

The idea is prevalent among inexperienced inventors that the mere issuance of a patent on anything, no matter how small the device or the improvement may be, stamps that thing with an artificial value above its intrinsic worth. This impression which has gained a foothold in the minds of inventors may be traced to various sources:

First, to the newspapers which occasionally record the alleged fact that some inventor has obtained millions from patenting a certain invention. As an instance, some years ago it was stated through the press that a man in California had invented a rail joint for which he had been offered several million dollars by a railroad. Later it was developed that the news item was manufactured out of whole cloth. Though everyone saw the original article, few observed the correction of it.

Second. Another source of misinformation is the circular matter of unethical patent attorneys who are not in good standing before the Patent Office, and whose practices are condemned by all right thinking people. In their advertisements and circulars there will be found displayed as prominently as printers' ink can make it, the statement that a million dollars has been offered for one invention, a hundred thousand dollars for another, and so on.

Third. The impression is also strengthened by the circulars of patent sale agents sent out after the patent has issued. Every patent sale agent wants the inventor to associate great value with his invention. No patent sale agent who is alive to his position hesitates to rate an invention for less than five thousand dollars and the value is usually expressed in five figures.

Recently we saw a circular of an agent, probably of Hebrew extraction, who, in order to play upon the superstitious element in the inventor's mind, suggested the sum of $7,777 as the value of his invention, claiming that Biblical and other history had recorded the wonderful luck always attaching to the numeral seven.

As a result of this misinformation, which is general throughout the country, inventors give their inventions an artificial valuation, and when the patents thereon are issued, immediately raise the estimate to even a higher point than before. They seek confirmation of their views by propounding the question: "What is the value of my patent: how much shall I ask for it?"

This is concededly a very difficult matter to decide. In the famous Wedderburn case, reported in C. D. 1897, p. 77, in which evidence was produced showing that the attorney upon reporting to his client that the invention was probably patentable, suggested to him "the rare merit or value of his invention," and indicated his expert estimate of the value of the invention to be "two, or five, or ten or twenty thousand dollars" as the case might be. The Commissioner of Patents commenting upon the facts stated:

"No twenty men in the country, with their combined intelligence and experience, without full and careful examination, could have given an estimate upon the value of an invention that would have been of value to the client, and especially before its patentability had been ascertained; and yet this individual sat as a kind of oracle, and fixed values without proper knowledge, without needful experience, and, as I must believe, without the slightest concern as to the effect his statement would have upon the client."

It is true that some simple inventions which required little thought and small knowledge of the prior art, have proved of value in a way, but such is not usually the case. The valuable inventions are those which are the result of hard work, careful study and experiment by those who have familiarized themselves with what others have done and with the real needs of the art. In other words, it is only those simple inventions which are broadly new which are of any considerable value. Efforts on the part of persons representing themselves to be attorneys, to create in the public mind an impression to a contrary effect, are fraudulent and misleading. Yet there are patent sale agents and patent attorneys in this country who can state offhand, without the slightest hesitation, that certain inventions are worth thousands and even millions of dollars.

There have been instances in the past when certain simple inventions have been very successful, and have more than repaid the inventors for the time and attention given to them; but it is never possible to state in advance the value attaching to a certain patent. In the first place, there are no standards by which to guage the value of patents. Each patent stands upon its own merits. Secondly, the scope of the patent and its relation to the prior art must be taken into consideration. Is it a primary patent, or a mere improvement? Is the improvement an infringement of any prior patent? Thirdly, assuming that the device is of a pioneer character and no infringement of any prior patent, is the invention ahead of the times or is there a present demand for it? If the device is a mere improvement, does it increase the sale or decrease the cost of manufacture of the original device?

Again, what is likely to be the cost of manufacture of the article as well as the selling price? What methods must be followed in selling the article? Is it a mail order article, or must it be manufactured and sold through jobbers whose profits must be taken into consideration?

Finally, is the invention one that must be sold directly to the consumer, necessitating the location of different factories throughout the country, or is the invention one for which a single manufacturing plant will suffice?

These and other considerations must be kept in mind in determining the value of a patent. The question can never be answered offhand, and we do not believe that any attorney is competent to express an opinion on the subject. And yet no question is more frequently asked of patent lawyers than this. The honest attorney, knowing his inability to give a correct answer, frankly tells his client so.

SECRECY OF APPLICATIONS—SHALL IT BE ABOLISHED?

One of the distinguishing characteristics of the United States Patent Office practice is the fact that all applications for patent are held as secret communications, and no information concerning any application will be given to anyone, except the applicant or his authorized representative who must file power of attorney, or other written authority, before such information is conveyed to him. This is by virtue of rule 15 of the Patent Office practice, reading as follows:

> "Caveats and pending applications are preserved in secrecy. No information will be given, without authority, respecting the filing by any particular person of a caveat or of an application for patent, the pendency of any particular case before the Office, or the subject-matter of any particular application, unless it shall be necessary to the proper conduct of business before the Office, as provided by rules 97,103 and 108."

Rules 97,103 and 108 are rules bearing upon the declaration of interferences. Of course, when an interference is declared between two pending applications, it is necessary for the interfering party's application to be revealed to the other party. This is the only exception to the general rule as stated.

Notwithstanding this rule of practice, there is an opinion quite general among the public, that applications for patent may be examined with the same freedom as patents themselves. Indeed, every practitioner before the Patent Office has been requested by a client at one time or another to examine pending applications in order to ascertain if there is anything on file against a certain invention. There has never been a time within our knowledge when it was possible for an attorney, or an applicant, to examine the papers of some other applicant, unless an interference had been formally declared between that inventor's application and the application of another party. The declaration of an interference naturally gives to each applicant the right to inspect the application of the other party, in order that the propriety of the declaration of interference may be determined.

Although the facts are as stated, the practice of the Patent Office making applications for patent secret has been repeatedly discussed, and the question raised as to the advisability of abolishing secrecy in patent applications. There are two sides to this question, and the predominant one is, whether or not secrecy benefits the inventor or is a detriment to his interests? The answer may probably be best determined by considering the practices of foreign patent offices.

As is well known, the Canadian Patent Office has patterned its practice so as to closely follow that of the United States Patent Office. With the Canadians all applications are held in secrecy with the same strictness as with us. In the Continental countries, it is quite different. In England, for instance, the filing of an application for patent is given publicity, and, when the application is accepted, it is printed and thrown open for examination by the general public for a period of two months. At that time, anyone may come in and oppose the grant of the patent. One would think that a great many declarations of opposition would be filed, but it is a curious fact that scarcely two per cent of the applications for English patents are opposed.

The same degree of publicity for the application obtains in other countries —in France, Germany, Austria, etc. In some countries the grant of a patent may be opposed, while in others no provision is made for the filing of oppositions, publication being given merely as a matter of information to the public, rather than with any intention of permitting opposition to the grant of the patent.

Just how such practice would work out in this country is a question about which many minds will differ. We can, however, imagine an application for patent being presented by a poor inventor on an improvement in machinery in which large corporations were interested. As soon as they became informed of the filing of the application, steps might be taken to oppose the grant of the patent, and, since the filing of the opposition would necessarily increase the cost of the patent, and possibly to a point beyond the pocketbook of the inventor, publicity would be apt to work a hardship in this case and cause him to lose his patent because of inability to fight the opposition.

We can suggest another instance in which publicity would be of considerable advantage to an inventor. Take the case of a man who has made an invention and before filing an application for patent has brought it to the attention of a corporation, which immediately proceeded to file an application for patent on some slight improvement, claiming the whole as its own. Before the true inventor could become aware of the proceedings, the patent would be granted to the corporation, and the inventor would be put to considerable expense to show his prior rights. Indeed, the matter might have proceeded so far before the inventor filed his application as to make it impossible for the inventor to establish his claim as the first inventor. In such a case, publicity would work to the advantage of the poor inventor.

We recall a case some years ago, where an inventor had devised a thill shaft or coupling which was a patentable improvement. He traveled from one section of the country to another, and, in each town he visited, he succeeded in interesting a man of limited means in the invention; filing an application for patent and assigning all his right, title and interest in each application to the local capitalist. It was recorded that the man visited at least a score of different cities, filed an equal number of applications for patent, and assigned the applications to as many different partners. Had the Patent Office published the filing of the first application, the trail of the fraudulent inventor would have terminated; and the additional applications with the consequent loss to different men throughout the country would have been avoided.

The abolition of secrecy of applications for patent would help inventors in another way. If it were possible for an inventor or his attorney to examine pending applications, it would, in many instances, save the expense and the trouble of applying for a patent. Quite recently an inventor made application for patent on something that was thought to be entirely new. The records of the Patent Office were searched, and nothing of an anticipatory character was found among the patents already issued. The application for patent was filed, and the invention was declared to be patentable by the examiner; but in a few weeks, notice was given of the proposed declaration of an interference, and, when the interference was finally declared and the applications of the other parties were opened for inspection, it was found that one of the cases had been pending in the Patent Office since 1910. If pending applications could have been examined at the time the inventor made his application, he would have been saved the expense of an application, because he would have known that it was useless to present an application for patent on an invention on which an application was already pending, dating back several years.

Perhaps a compromise between absolute secrecy and complete publicity might be arranged somewhat along the lines of the English practice. Let applications be filed and held secret up to the time that they are officially allowed by the examiner to whom they have been assigned for examination. Then, instead of as at present permitting applicants to take out their patents immediatley on the allowance of the applications, throw the cases open for inspection for a period varying from two to six months, and permit attorneys, corporations and other applicants to examine the allowed applications. In this way objections might be found to exist to the grant of the patents; new references might be brought to the attention of the examiners, and other reasons adduced why patents should not be issued in the cases in which applications had already been allowed. In other words, while not permitting formal opposition to be filed against the grant of patents, applicants and others interested in the subjects embraced by the allowed applications, might be allowed to advance reasons why patents should not be issued in certain individual cases. Such a practice would prevent the grant of invalid patents, and it is a well known fact that under the present practice, no matter how careful the Patent Office is, patents are granted each week that are afterwards ascertained to be invalid and worthless. No attorney wants to have a worthless patent issued to his client. No inventor should desire an invalid patent granted to him, and it is believed that some modification of the present system would work advantage to the inventor, without any corresponding disadvantage. We believe that the time will come when the Patent Office will be obliged to let down the bars somewhat and permit allowed applications to be inspected and reviewed, before having the patents formally issued.

International Wireless Regulations.

As a result of the Titanic disaster, resolutions passed at the recent conference of radio-telegraphers in London, decreed that the wireless station of a ship at sea should remain silent for a certain period of each hour, during which the operator should be watching for distress signals only. In such cases should a number of boats happen to answer her S. O. S. call, the distressed ship should decide, in order to avoid confusion, which of those responding must remain silent. Weather observations are to be given right of way over commercial dispatches. England, Germany, France, Italy, Spain, Portugal and Russia; as well as the United States have adhered to the agreement.

An invention now being perfected by Marconi will help in lessening the danger of sea travel, by causing an alarm bell to ring at all wireless stations which receive the distress call. If the operator should be off duty, the ringing of the bell can be heard by anyone, and the operator can be notified. Marconi says that in order to make the idea effective, it will be necessary to alter the wireless regulations so that the S. O. S. signal could be accompanied by a sequence of waves, lasting a period of twenty or thirty seconds. This would cause the bell to give a prolonged ring, enabling an ordinary seaman or anyone on duty near by to know that a ship required help.

Convict Inventors.

It is well known that a criminal, in order to be successful, must have an active brain. Many crooks are so clever that, if their mental powers had been employed along legitimate lines, they would have attained prominent positions. Being shut up behind prison bars, some have turned their talents to account in the invention of devices that are most ingenious. One convict recently made a machine to prevent the alteration of checks or the forging of signatures to negotiable paper. Another, who was serving a term for counterfeiting, invented a steel toothed burglar trap, and a contrivance which, placed inside the vest pocket, prevents a man's watch from being "lifted." The above are examples of the saying "It takes a thief to catch a thief," but other inventions of an entirely different nature spring from the intelligence of criminals. A few years ago a convict left the state prison of Massachusetts a rich man, on account of a contrivance which he had perfected. It was a device which abolishes the necessity of a bobbin in the sewing machine, and it was sold for a round sum to a New York manufacturer. One of the most desperate law breakers that was ever captured, made a baby's rattle while he was serving his term and also an antinocotine pipe. A celebrated coiner produced a coin making machine, so perfect in every detail that the mints of several foreign countries are now using it. Unfortunately for the inventor, he could not resist the temptation to turn coiner on his own account, and the result is that, instead of drawing over $10,000 a year in royalties on his invention, he is at present leading a secluded life in Portland penitentiary.

A notorious burglar devised a method of fixing a violin bow, and it is to another member of the same fraternity that the world owes what is known as the Johnston pump and helmet, which are used in diving. With the aid of these appliances, a diver is not only enabled to descend to great depths in the sea, but also to explore caves, and turn six or seven sharp corners while under water, a thing which was quite impossible before. The inventor, Arthur Johnston, was a burglar, and it was to enable him to enter one of the largest banks in London that his pump and helmet were devised. For a number of years, Johnston confessed, he had kept an eye on the bank, even procuring a job as porter in it so that he might make more certain of his ground when it came to the crucial moment. Then he rented a house near by and set to work. He discovered that a kind of sewer ran under the bank's strong room, and from it he meant to chisel his way up into the treasure vault above. But it was impossible to stop long in the sewer without some guard against the chance of being drowned. So he invented his pump and helmet, and although he failed in his daring scheme, his invention has enabled men to explore depths which were previously beyond them.

The medical fraternity have every reason to be grateful to a certain Du Chaillon, whose inventive genius produced the hypodermic syringe, as thousands of lives are annually saved by its aid. Du Chaillon was a man of exceptional ability and gave promise of a brilliant career as a physician, but an unfortunate escapade caused him to drift into the society of criminals. He formed a "crime school" where the young hopefuls of Paris, stimulated by the hypodermic syringe, accomplished deeds of daring and roguery that amazed the country. The school was eventually raided, but the master escaped. It was revealed at the trial, however, that all his great coups had been the work of boys, who had been brought up to a steeliness of nerve by means of a syringe. The value of the syringe was obvious, and medical men all over the world soon took full advantage of the instrument which the talented criminal had devised.

Thermit, which has helped latter-day science and mechanics to such an extent, was discovered by a notorious scientific crook named Von Schmidt. He was known to the European police as Count Ether, because of his ability to vanish as quickly as that volatile spirit. So terrific is the heat obtained with the use of thermit that steel melts like wax. Nearly $10,000,000 were stolen from the strong rooms of London, Paris and Berlin banks during 1898, and thermit was the key in each case. But Von Schmidt made a mistake when he attempted to patent his invention. He offered to show a patent agent in Belgium a sample of his work by boring into the agent's safe. An hour later he was in the hands of the police.

Vacuum Tires.

The pneumatic tire problem, which has persisted since the days of the introduction of the safety bicycle, is solved at last, if a device described in *Popular Mechanics* works as well as is predicted. The contention is that the elimination of air, in other substitutes for the pneumatic tire, limits the elasticity of the tire to the degree of elasticity possessed by the substance of which the tire is composed. The inventor says that it is evident that a tire which depends for its easy-riding qualities on the compressibility or extensibility of solids, can never compete with the pneumatic, since air has no elastic limit. With these principles in mind he has evolved what he calls a single-tube, wrapped-tread, vacuum tire, the innovation being that the air is pumped out from the interior instead of being compressed into it. The vacuum chamber is one half inch wide by two and seven-eighths inches long, when the tire is subjected to atmospheric pressure only. When the weight of the car is applied, however, the chamber tends to widen in the middle and this tendency is resisted by the pressure of the atmosphere which is exerted on the outside of the tire. Thus the vacuum tire, like an ordinary pneumatic, depends for its resilience on air pressure, and yet blowouts are impossible, for the pressure is all external and the fabric is not strained. Punctures, though not impossible, need not occasion delay, for the tire is heavy enough to be used as a cushion tire.

A CLASSIFIED list of Patents issued during the month appears in each issue of the INVENTIVE AGE. This keeps inventors and manufacturers posted in the art in which they are most interested.—We will send. postpaid, to any address, printed copies of any U. S. patent, with specifications and drawings, upon receipt of 10 cents per copy.—Please give correct data in ordering.—Address.

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Horse hitching device....G. K. F. Jack
Horseshoe....C. L. Winston
Horseshoe calk clamp....G. J. Helfrich
Hose coupling and hose fastener....W. E. Patrick
Hose pipe coupling....T. Brookfield
Hot air engine....S. J. Webb
Hub for vehicle wheels, Spring....H. B. Bigsby et al.
Humidor, Pocket....J. E. Gelder
Hydrant....G. W. Hayden
Hydrocarbon burner....O. J. Effenbeck
Ice manufacturing apparatus....R. J. Berryman
Implement handle....W. J. Dunham
Indicator....N. C. Locke
Induction motor....B. McCollum
Injector....J. Baschkin
Internal combustion engine..A. M. Laycock
Internal combustion engine....L. H. L. Bellem et al.
Key holder....M. Castholm
Key ring holder....H. Elder
Key seating machine....G. J. Costello
Keyhole guard....L. B. Howard
Knitting machine....E. Paquette
Labeling machine....W. Robertson
Lace guard, Shoe....F. Colt
Lamp, Incandescent electric....E. H. Tate
Lamp, Metal filament incandescent....G. Ludecke
Lamp, Miner's....S. W. Metz
Lamps, Safety device for gas....F. Huttenlocher
Lasts, Rotatable tool for beating uppers on....R. E. Crain et al.
Lathe centering tool....D. L. Calahan
Lathe spindle gearing....J. C. Potter
Lathes, Milling attachment for metal....H. G. Haase
Leather splitting machine (2 pats.)....J. H. Gay
Level, Plumb....B. F. Yantis
Level, Spirit....S. Dean
Life net....A. R. Berger et al.
Lifts or hoists, Recording and indicating the working of hydraulic and electric....H. A. Matear et al.
Liquid dispensing apparatus....A. Kalthoff
Liquid fuel burner....T. R. Aulsebrook
Loading apparatus....J. R. Alexander
Lock....A. G. Anderson
Lock....L. L. Kellogg
Lock....F. Egge
Locomotive ash pan....J. A. Swartz
Locomotive attachment, Steam....H. T. Aydelott
Locomotive engine....C. L. Heisler
Loom, Automatic weft replenishing....D. M. Hollins
Looms, Automatic spool changing apparatus for....A. G. Koechlin
Looms, Magazine stop for weft-replenishing, (2 pats.)....E. S. Stimpson
Magneto....C. E. Johnson
Mail carrier, Electric....S. A. Brandt
Mail delivering and receiving apparatus....W. Kraenner
Mail marking machine....F. C. Ielfield
Mailing card and frame, Combined....C. K. Reese
Manure spreader....W. E. Alexander
Marking gage....N. Helwig
Match box....F. W. Gulland
Mattress rack....R. Evans
Mattress support, Folding....W. H. Jones
Measure, Device for indicating liquid....C. L. Phillis
Measuring device, Rope....W. O. Sommerfield et al.
Measuring instrument of the coincident-image type, Distance....E. Bernick
Metal blanks, Machine for circling....G. R. Lawrence
Metal mixers, Safety device for....W. P. Gleason
Metal tubes, &c., Making....E. Maertens
Mitering device....F. N. Russell et al.
Mooring device....O. E. Hansen
Muffler....J. M. Michaelson
Music leaf turner and holder..K. S. Asland
Music sheet turner....M. J. Ryan
Music sheets, Adjusting mechanism for rolls or spools for perforated....O. Nelson
Musical instruments, Means to assist tuning pneumatically-operated..G. K. Heuing
Nest....L. W. Mittendorff
Nut cracking device....M. Golek
Nut lock....W. F. Bonness
Nut locking washer....J. Cookerley
Oil container safety device protector....R. L. Ziller
Oil feeding device....C. F. Hoofer
Ore concentrator....C. I. Glassbrook
Osteopathic table....J. V. McManis et al.
Overshoe fastener....J. B. Murray et al.
Oxalates, Manufacture of....D. Strauss
Package clasp....C. G. Parks
Packing....E. J. Bloom
Packing for engine piston rods and the like, Flexible....A. C. Judd
Paper bag holder....H. L. Snyder
Paper from peat, Manufacture of....B. Granville
Paper making machines, Construction and means of operation of pulp-straining drums for....L. Marguet
Parcel tier....B. H. and R. N. Bunn
Pen and the like....P. J. Fouquier
Pen, Fountain or self-feeding....H. Gilbert
Pencil, Self-sharpening....N. Crane
Perambulator or baby carriage, Folding....F. J. Beier
Phonograph....H. B. McNulty
Photographic printing machine....R. R. Loving
Piano action, Pneumatic....V. Kranich
Piano keyboard....C. Fischer
Piano player and the like, Pneumatic....M. M. Kastner et al.
Piano violin....A. Philips
Picture machine, Moving....A. S. Howell
Pile fabric, Woven....G. Crossland
Pin....C. F. Markham
Pipe cupling....J. H. Shepherd
Pipe reamer....D. M. Hatton
Pipe reamer....J. R. Long
Pipe reaming machine....J. R. Long
Pipe wrench....E. J. Spink
Planing apparatus....W. F. Rice
Planter....W. W. Lowe
Planter, Corn....S. H. Garst
Planters, Box for seed....M. E. Hughes
Pliers, Parallel jaw....R. E. Gregg
Plow....O. Georg
Plow handle mount....A. M. White
Plunger switch....E. S. McLarn
Pneumatic wheel....G. H. Treadgold
Polishing cloth....H. S. Webster
Power for presses, &c., Generator of hydraulic....A. T. Bossert
Power transmission device....G. W. Marble
Power transmission mechanism, Variable-speed....W. I. Twombly
Power transmitting mechanism..J. E. Bissell
Pressing machine, Garment....C. Todd
Pressure recorder, Differential....W. H. Bristol
Printer and holder, Paper roll....J. J. Sprinkle
Printing surfaces, Bending....B. F. Upham
Pulverizer....G. R. Mitchell
Pulverizer....J. H. Hirt
Pump....W. S. Gregg
Pump, Rotary....J. Lehne
Pump, Rotary....F. T. Clarke
Push button....W. B. Eichholtz
Rail....H. Collins
Rail and rail joint, Guard....G. E. Woods
Rail, Guard....M. Ryan
Rail joint....V. Domogalla
Rail joint....M. L. Leonard
Rail joint....G. Edick
Rail joint and securing device, Combined....C. F. Courson
Rail joints, Track fastening for....B. Wolhaupter
Rail laying apparatus....J. Reinehr
Railway rails to ties, Device for securing....C. F. Courson
Railway spike....H. H. Lange
Railway switch operating device..E. T. Hebb
Raisin seeders, Making impaling rolls for..A. R. Thompson
Ram, Duplex hydraulic....R. Y. Boyce
Rat trap....H. M. Sprague
Rat trap, Electric....M. Kruczynski
Razor, Safety....J. A. Service
Receptacle, Divisional....J. A. Phin
Receptacle, Locking....P. W. Hodgkinson
Refractory article and making it....F. M. Becket
Regenerative furnace....P. Patterson
Relay for undulatory currents....R. von Lieben et al.
Remedy, Dandruff....T. J. Lynch
Rennet-package and making same....A. J. Marschall
Resurfacing device....G. A. Parks
Retort closure....T. D. Miller
Roll....H. Parker
Rolling mill, Step-by-step....H. Ackermann
Safety elevator....P. J. Rivers
Sand blast....J. C. Myles et al.
Sausage case turner....A. B. Loerke
Saw filing machine, Band..H. Hestand et al
Sawmill carriage....G. Lemieux
Sawmill setting and receding mechanism....D. C. Prescott
Scaffold supporting mechanism....E. H. Henderson
Scoop washing cylinders, Machine for making....W. Bartholomew
Score board....J. A. Groves
Scrubber and mop, Combined....W. Dupre
Scrubbing apparatus....A. W. Fietz
Seal....A. M. Paulers
Seal, Car....W. Grayson, Jr.
Seal for box cars, &c....W. H. Northall
Sealer, Fruit jar cap....H. Kaiser
Seat fastener....L. H. Hubbard
Sectional boiler....J. B. Bernhard
Seed delinting drum, Cotton....J. H. McCormick
Seed drill....D. L. Cheley
Sewing machine....F. Chatfield
Sewing machine....C. J. Coleman
Sheet cutting machine....H. De Smith
Shelf support....G. W. Young
Ship coaling apparatus....M. S. Iverson
Shipping box....C. L. Arnold
Shock absorber....F. W. Weyman
Shock tying device....C. R. Tilford
Shuttle threading device....C. Mill
Side board lock....E. Craig
Signs, Means for producing and exhibiting luminous....J. Lmringer
Sleigh attachment....W. Bolstem
Smoke and carbon consumer....S. Heath
Smoke suspended matter, Apparatus for separating....H. L. Anderson
Smoking pipe....J. Glossinger
Soaps and cleansing composition, Organic-chloro-compound....G. Koller
Spark arrested....W. C. Yeomans
Spark plug....W. S. Witter
Spectacles....F. A. Stevens
Speed regulating mechanism..J. C. Carpenter
Spike holder....G. W. Wright
Spring wheel....C. J. Dean
Spring wheel....J. D. Knight
Stacker, Hay....J. O. Van Cleave
Staking machine....P. Bohacek
Stalk puller....C. R. Smith
Stamp, Pneumatic ore....H. C. Behr
Stay, Garment....M. M. Beeman
Sterilizing liquids by means of ultraviolet rays, Apparatus for....A. Neyen
Stove, Gas....G. B. Carter
Straw, Utilizing Indian corn....B. Dorner
Stretching device....E. Burks
Switch and tap-off, Combined..W. J. Newton
Switch-boxes, Cover for electric..H. B. Roe
Switch for alternating current machines....F. W. Trefry
Syringe....G. M. Rhone
Table....M. Baron
Table and desk, Combination..C. F. Schulz
Tachometer....M. Hoeft
Tap wrench....W. Russell
Target practice apparatus..H. H. Cummings
Target trap....J. H. Wilder
Tea and coffee pot and the like....A. F. Gardner
Telephone exchange system..R. H. Manson
Telephone, Railway....D. D. Biggers
Telephone system....H. G. Webster
Thermometer....J. Cowling
Thread cutter, Floating....G. S. Weinerth
Thread end into cops, Apparatus for drawing the....E. Fritsch
Threading die....O. A. Smith
Threshing machine closure..D. A. McConnell
Tie and rail fastener, Combined....T. G. Oelke
Tie anticreeping device....J. O'Shea
Tie plate....J. Henberger
Tie plate, Anticreeper....D. P. Wolhaupter
Timepiece winding indicator....O. Ohlson
Timing device....O. A. Knopp
Tire, Armored pneumatic....J. Lend
Tire filler....W. E. Howser et al.
Tires, Means for indicating the deflation of pneumatic....F. H. Treat
Tobacco pipe....R. D. Grame
Tongue, Adjustable....P. Hansmann
Towel rack....L. Straub
Toy derrick operating mechanism....A. Pfeiffer
Toy, Mechanical....A. F. Kuhl
Traction wheel....S. M. Bower
Train order pad holder....W. H. Barney
Tramway track....P. Starke
Transplanter....J. T. Matthews
Tree protector....J. Bouska
Trousers pressing device....J. E. Miller
Truck....C. A. Williams
Trunk....W. C. T. Hansen
Trunk lock....F. Soley
Tuft....F. W. Oehrle
Tumbling and polishing machine....H. R. Richardson
Turbine, Elastic fluid....T. R. Sanders
Turbine regulating device, Reaction....H. A. Singrun
Turbine, Steam....C. W. Drake
Type writing machine (2 pats.)...E. G. Latta
Undergarment....A. A. H. McAllister
Universal joint and four-wheel drive....J. L. Yeoman
Uterine tube, Self retaining....R. Jentzsch
Vacuum cleaner tool....S. C. Ball
Valve....E. L. Riddick et al.
Valve....A. H. Probst
Valve and valve gear....W. L. Crouch
Valve, Check....F. J. Bardo
Valve drive for steam engines, Independent inside....R. Eaton et al.
Valve for water tanks....H. L. Braly
Valve, Gas....F. G. Nicolaus
Valve, Gas engine....W. E. Hallett
Valve mechanism for automobile engines, &c....O. E. Kellum
Valve, Needle....C. J. Coleman
Valve or cut-off....L. B. Howard et al.
Valve remover....H. J. Beck
Vehicle, Electric....R. Macrae
Vehicle wheel....G. R. Bennett
Vehicle wheel....C. A. Russell
Vehicle wheel, Spring....C. F. Heinss
Vending bottle....S. Holland et al.
Vending machine....L. K. Mearkle
Vending machine....G. Pleoger
Vending machine....N. I. Sheehan
Veneering tape....G. Goodsir, Jr.
Ventilating apparatus....R. Carroll
Ventilating device....F. P. Mies
Vessel closures, Machine for affixing....A. B. Starr
Vibrator, Spray....J. G. F. Renter
Voting machine....W. A. Swaren
Voting machine....J. C. Wilson
Vulcanized froth from india rubber, gutta percha, and balata, Manufacturing hot....F. Pfleumer
Vulcanizer, Steam....A. M. Baugh
Wagon, Dumping....H. F. Snyder
Washbasin....G. E. Swyney
Watch holder....E. W. Hill
Watch protector....J. A. Fuller
Watch securing device....J. F. H. Heide
Water carrier....W. W. Penry
Water closet, Sanitary portable..M. Schiller
Water heater....N. L. Van Zandt

Water motor, Impact.....W. A. Doble
Water tube boiler.....A. F. Yarrow
Weeding device...F. W. and C. J. Behrendt
Weeding hook.....J. J. Hess
Welding burner.....H. H. Lanning
Welding, Electric.....L. S. Lachman
Well boring and drilling machine, Portable.....H. H. Haight
Well casing and apparatus for sinking the same, Sand.....A. P. Schnyder
Wheel rim equalizing and truing machine.....G. A. Ensign
Wheel rim, Resilient metal.....C. La Cour
Wheelwright.....C. L. Brink
Windlass for hay forks.....T. F. Tallon
Windmill.....R. D. Richard
Window cleaning device....T. A. Corcoran
Window pane fastening.....V. V. Ormsby
Window screen.....F. P. Moyer
Window ventilator.....N. M. Barnes
Wire cloth screen.....H. F. Jackson
Wire twisting or splicing machine.....R. Reed et al.
Wrench.....C. H. Douglas
Wrench.....H. Zielinski
Wrench.....B. B. Caldwell
Wrench and clamp, Combined..W. Charlton

Issued September 24, 1912.

MECHANICAL PATENTS.

Abrading roll cleaner.....W. T. Courtney
Abrasive.....C. H. Casebolt
Acoustical instrument.....L. Lumiere
Adding and writing machine....H. Hopkins
Aerial illuminating mechanism...A. J. Austin
Aerodrome.....W. L. Green
Aeromotor.....B. Zobel
Aeroplane flying machine..C. E. Winterros
Aeroplane, flying machine, and the like.....G. P. B. Smith
Aeroplanes, Automatic balancing mechanism for.....J. S. Vogt
Agricultural implement.....G. B. Garrison
Air craft (2 pats.).....F. Brackett
Air craft safety device.....J. Kratofill
Airship.....C. A. Furtaw
Airship.....E. H. Mattson
Amusement and strength testing apparatus.....C. Spratt et al.
Armature winding.....J. F. McElroy
Attrition mill.....A. Schroeder
Automobile flag holder..E. H. B. Lindhorst
Automobile power transmission attachment.....T. Nesom
Autosleigh.....W. H. Halladay
Awning.....C. Richards
Awning, Folding steel.....G. E. Osgood
Bag fastener.....L. B. Prahar
Bag jaw fastener.....L. L. Prahar
Bails of vessels, Eyelet for engaging the.....R. W. Goodpasture
Balance, Aerostructural.....R. M. Palmer
Baler, Paper.....A. E. Beall
Balls, Making hollow metallic (2 pats.).....J. W. Schatz
Bath cushion.....W. C. Trick
Bean cleaner.....W. J. Bloomfield
Bedstead, Detachable folding..S. L. Harman
Beer cases, Protective shield for.....P. T. Clark
Beer pipe cleaner.....H. Hubert et al.
Beet top cutter.....W. and H. A. Maurer
Bicycle spring seat.....W. J. Sleffel
Binder, Loose leaf.....E. Stanton
Binder or holder for sheets or pads.....R. Krumming
Blast furnace.....C. Hicks
Blind slat fastener.....B. Jackle
Bolts, &c., Automatic detent mechanism for sliding.....F. G. Tua
Book, Manifold sales.....G. Mefort
Bottle, Non-refillable.....C. E. Laning
Bottle, Non-refillable.....J. Frohnholzer
Bottle stopper.....C. A. Natt
Bottle stopper.....W. G. Gaduc
Bottle stopper.....H. T. Ray
Bottling machine attachment...A. F. Atwood
Box.....H. E. Webb
Brake device, Load.....W. V. Turner
Brick carrier.....G. E. Goldner
Broom bridle.....W. H. Smith
Brush, Stencil.....A. D. Cardinet
Brushing and polishing device.....E. M. Swanson
Bundling machine, Automatic..S. C. Cox
Burglar alarm.....F. C. Hatch
Burglar alarm, Electric..T. W. Keenleyside
Burner.....G. C. Gill
Butter, Making.....A. W. K. Witte
Cabinet, Cigar box.....J. J. McCarthy
Cabinet, Wrapping paper.....G. A. Wilkinson et al.
Cable or the like applicable to the formation of blocks on such cable, Apparatus for opening out multiple-wire.....A. Doxford
Calculating apparatus.....W. H. Sleight
Calculating device, Interest.J. J. Fitzgerald
Calculating instrument.....C. A. Bishop
Calculating machine.....F. Trinks
Camera and projection machine, Moving picture.....V. L. Duhem
Camera, Photographic.....C. Bornmann
Can filling machine..J. H. and F. W. Burpee
Car attachment.....E. E. Campbell
Car cast steel underframe....C. H. Howard
Car door.....A. C. Sager
Car fender and wheel guard..G. H. Bolduc
Car, hose, and electric wire coupling.....L. and J. Le Compte
Car, Railway.....I. Pascal
Car roof.....J. J. Hoffman
Car roof, Outside metal.....J. J. Hoffman
Car underframe, Dumping.W. P. Bettendorf
Cars, Basket for passenger..O. J. Mennenga
Carbureter.....F. H. Walker
Carriage top bow coupling..E. R. Rhodes
Caster.....O. Pittack et al.
Casting apparatus, Pressure..A. W. Morris
Casting apparatus, Pressure.....S. P. Wetherill, Jr., et al.
Cement reservoir.....W. A. Boyce et al.
Chandelier support, Adjustable.....R. Daugherty
Chart, Guide.....J. Rindall
Cheese cutter, Computing....J. H. Osborne
Chip holder.....W. P. Fornfinne
Chipping machine.....J. R. and T. Ray
Churn.....J. W. Miller
Cigar lighter, Electric.....J. Leveen et al.
Cistern cleaner, Vacuum.....H. Stucker
Classifying or grading apparatus.....G. H. Stanley
Clock.....A. McGugan et al.
Clock case, Marine.....W. F. Porter
Cloth stretching machine...M. P. Hayward
Clothes line hand reel.....W. E. Huenefeld
Clutch.....G. Bergmark
Clutch.....H. B. Savage
Clutch actuating mechanism....P. Daimler
Coat collar pattern.....H. R. Western
Cock, Gage.....L. W. Daniels
Cock, Gas.....A. W. Groves et al.
Coin controlled lock.....G. G. F. Boswell
Coin distributing apparatus..H. A. Smith
Collapsible chair and bag, Combined.....J. M. Arnold
Collar (2 pats.).....S. Harris
Column mold...P. A. and L. P. Deslauriers
Compound containing active oxygen and making same.....G. F. Jaubert
Compound or composition of matter and producing same.....A. J. Rossi et al.
Concrete piles, Cushion head for.....A. R. Eichler
Concrete pouring system.....R. F. Taylor
Concrete ties, Making hollow reinforced.....H. R. Leonard
Conduit machine.....J. S. Wheeler et al.
Connector.....W. P. Hammond
Container for retaining articles in a chilled or frozen condition.....J. Fritsche
Container for retaining articles in a heated condition.....J. Fritsche
Coop, Chicken.....C. V. Hays
Coop, Poultry.....L. D. Fowler
Copying machine, Sculptor's.....H. Hundrieser
Corn popper with detachable handle and lid.....C. C. Cornwell
Corn rack.....J. H. Brown
Corn sheller feeder.....J. N. Kailor
Cotton chopper.....E. K. Moore
Cotton gin.....J. R. Fordyce
Cotton, Machine for removing leaves and trash from seed.....O. C. Houghton
Counter.....C. H. Veeder
Counter.....J. G. Biggar
Counting machine.....R. A. Melton
Cover, Vessel.....O. Kampfe
Crate, Foldable shipping.....M. Shepard
Cross tie, Steel.....W. M. Scott
Crusher or pulverizer adjusting mechanism.....M. F. Williams
Current meter, Alternating.....K. H. Gyr
Current motor.....O. D. Booth
Curtain bracket.....J. F. Sofranko
Curtain stretcher.....C. G. Carlson
Curtains or the like, Means for hanging.....C. B. White
Damper, Automatic spring...M. F. Gibbons
Dash pot.....A. C. Livermore
Dental hand pieces, Angle attachment for.....J. A. MacDonald
Designs, Devices for making....L. L. Allen
Developing apparatus.....S. Pratt
Diamonds, Regrinding and polishing perforated.....L. Poppe
Dies and dolly.....F. A. Gill
Ditching machine.....R. Y. Kessler
Door and the like, Hollow metal..A. J. Ellis
Door and the like, Sheet metal..A. Johnson
Door hanger.....L. A. Bittorf
Door, Hollow metal.....A. J. Ellis et al.
Door operating mechanism.....T. A. Heron
Door stop.....F. W. Stanton
Doors, Fluid pressure apparatus for operating bulkhead and other.....F. J. Pike et al.
Dough raiser.....F. T. Lembke
Draft equalizer.....W. W. Cameron
Drag attachment.....E. C. Gledhill
Drawer, Sliding.....K. Kral
Drawer stop.....V. C. Lappert
Dress, Woman's reversible front house.....W. C. P. Baldwin
Drier.....R. D. Greene
Drier.....G. E. Scott
Dry kiln for lumber (2 pats.)...J. M. Leaver
Driving device, Frictional....W. J. Hardy
Elastic wheel.....L. A. Hubert
Electric conductor connector (3 pats.).....H. F. Maxim
Electric controller device..J. F. Miller et al.
Electric fixture.....A. R. Lockwood
Electric generator, Variable speed.....C. H. Roth et al.
Electric machine, High tension magneto.....W. O. Kennington
Electric motor.....H. I. Finch
Electric push button switch....J. Brunner
Electric signal.....C. C. Blake
Electric signal and train control.....J. H. Sanor et al.
Electric switches, Pneumatic blow-out for.....E. H. Dewson
Electrical connections, Lock snap contact for making.....J. O. Heinze, Jr.
Electrical connector.....W. O. Kennington
Electrical resistance.....E. Thompson
Electrical rosette.....W. J. Gagnon
Electrical switch, Disconnecting.....D. C. Hooker
Electricity meter.....G. M. Willis
Electrode, Arc light.....E. J. Guay
Electrolysis, Diaphragm for..O. Dieffenbach
Elevator brake.....J. Hill
Elevator door guard.....L. Christiansen
Elevator or conveyer....P. G. Donald et al.
Elevator safety device.....J. Hill
Embroidery hoop.....M. L. Keagy
Engine safety starting device, Internal combustion.....J. M. Rhett
Engine sparking regulator, Internal combustion.....G. W. Hutchinson
Engine starter.....J. A. Germonprez
Engine starter.....F. Briggs
Engine starting device, Gas....E. Williams
Engine starting device, Explosion.....F. C. Hayes
Engine starting device, Internal combustion.....O. Fraschini
Engines, Counting apparatus for the indicated output of piston.....A. F. C. Bottcher et al.
Engines, Electric ignition system for internal combustion.....J. L. Milton
Envelop.....A. W. McGuire
Envelop machine.....G. W. Smith et al.
Envelop, Safety.....M. E. Caldwell
Equalizer connection.....J. W. Gamble
Etching machine, Plate.....H. W. Baker
Evaporator.....R. B. Hall
Exhaust strand.....A. J. Hall
Exhibition device, Automatic..A. Hinzpeter
Expulsion switch.....E. M. Hewlett
Extension table.....C. Hedrich
Eyeglass holder, Safety.....E. W. Dick
Eyeglasses.....H. D. Styll
Fan, Blower.....D. H. Cook et al.
Fan, Fly.....J. W. Richards, Jr.
Fans of motor vehicles, Means to drive....W. I. Twombly
Farrowing house.....J. Q. Clarke
Feed trough.....J. H. Davis
Fence posts, Wire fastener for metallic.....H. L. Hartley
Fibrous substances like asbestos and hydraulic binding substances, Manufacture of plates from.....H. Klee
Filaments of incandescent electric lamps on their supports, Apparatus for winding the.....G. Dobkevitch
Filter for oil, grease, and other substances.....G. G. Scurfield
Firearm, Magazine.....B. S. Parsons et al
Flashing block.....F. D. Renaud
Fluid gage.....H. Hastings
Fluid pressure regulator.....J. J. Bodwin
Flush tank regulator.....G. L. Weller
Flushing apparatus.....A. Summers
Flying machine.....R. H. Froelich
Flying machine.....T. N. Smith
Flying machine.....A. C. Harry
Flying machine.....F. D. Willis
Flying machine.....H. Hardgrave
Flying tent.....E. Gerber
Fob ribbon holder.....D. T. Denny
Framing tool.....M. F. Adkins
Freezer.....G. F. Dickson
Freezing apparatus.....G. F. Dickson
Fruit picker.....J. F. Bookwalter
Fuel reservoir.....W. H. Moran
Fuel, Transporting and utilizing.....J. H. Hoadley
Furnace.....F. F. Corliss
Furnace.....O. Trossin
Furnaces, Apparatus for controlling the admission of steam to the auxiliary blast of boiler.....G. De Grahl
Fused disconnecting switch.....R. C. Cole
Gage glass for boilers and the like..T. Maas
Game apparatus.....J. C. Hutton
Game apparatus.....G. A. Dorste
Garment concuting machine.....S. Lipson
Garment rack.....M. Vaughan
Gas, Generating.....D. D. Barnum
Gas generator.....C. A. Kuenzel
Gas generator, Acetylene.....P. F. Willis
Gas igniter.....O. Struller
Gas light, Inverted incandescent.....V. H. Slinack
Gas mantles, Package for.....F. V. Bowman et al.
Gas, Producing.....J. H. Hirt
Gas producing oven, Regenerative.....A. Gohmann
Gas refrigerating and drying apparatus.....C. H. Leinert
Gases, Apparatus for cleaning, cooling, and mixing.....H. E. Theisen
Gases, Refrigerating and drying.....C. H. Leinert
Gases, Treating furnace.....U. Wedge
Gear, Split.....S. B. Freeland
Gearing.....E. Cook
Gearing Transmission.....G. S. Maxwell
Golf clubs or similar instruments, Means for indicating the striking force of.....S. O. H. Collins et al.
Governing device.....W. W. Dean
Governor.....J. J. Lisch
Grain drying apparatus..H. J. Puckett et al.
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Hame fastener.....F. M. and M. D. Howe
Hammock cradle.....H. L. Hohlfeld
Harvesters, Binder-head for....J. L. Ware
Harvesting machine trip device..C. O. Bolen
Hat box.....U. Ullitz
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Heating appliance.....J. Buettner
Hinge joint for wall beds, Invisible.....
.....C. Merritt

Hoisting apparatus...J. W. Hammond et al.
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Horse overshoe.....C. G. Delano
Hose coating machine.....H. Z. Cobb
Hose supporting clasp.....D. H. Buell
Hot air bath.....A. Klotz
Hub wrench.....C. C. Lewis
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Hydrogen by autocombustion, Preparation of.....G. F. Jaubert
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Igniting device.....E. G. Carlson
Igniting system, Unispark....E. S. Lincoln
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Ignition timer....W. B. S. Whaley et al.
Images to a distance, System of transmitting.....A. C. and L. S. Andersen
Implement holder.....R. B. Taft
Incandescent mantle.....J. B. Hipwell
Incubator.....T. N. Thomson
Ingots, Method of and means for stripping.....E. Gathmann
Insect destroyer.....E. H. Schwartzburg
Insulating materials, Making..E. Hemming
Insulator, High potential....L. Steinberger
Interlocking block structure.....A. Haas
Internal combustion engine...O. W. Curtis
Internal combustion engine (2 pats.).....W. B. S. Whaley et al.
Internal combustion engine..E. P. Robinson
Internal combustion engine..N. E. Crothers
Invalid's chair.....W. Diemer
Iron and steel articles, Permeating protective for.....H. J. Lohmann
Ironing board cabinet.....A. Friske et al.
Ironing table.....E. J. Patton
Jar closure.....C. J. Johnson
Knife.....J. E. Buck
Knitting machine, Circular..A. Gagne et al.
Knitting machine, Rib.....J. D. Morley
Knitting machine tension mechanism.....J. D. Morley
Ladder.....W. E. Wine
Lamp.....A. E. Thompson et al.
Lamp.....G. F. Wehr
Lamp and supporting bracket therefor, Electric.....G. Williams
Lamp, Gas.....H. Rubin
Lath, Forming ribbed.....T. H. Kane
Lavatory.....H. M. Weaver
Lifting jack.....H. C. Klein, Sr., et al.
Lighting fixture.....L. Schephoes
Litter carrier.....H. B. Hester
Load carrier.....G. W. Maskrey
Loader.....L. Thortvedt
Loading appliance, Vehicle..C. V. Hanson
Lock.....W. E. and O. F. Sparks
Locking hook, Coin controlled..L. Williams
Locomotive cross head.....J. D. Lewis
Locomotive frame.....G. Bright
Loom.....S. S. Jackson
Loom for weaving gauze.....E. K. Geier
Lubricator.....W. H. Beatty
Lubricator.....P. H. Caraway
Mail bag catcher and deliverer.....G. W. Pomeroy
Mail box.....H. R. Cagley
Map for automobiles, Automatic road.....H. L. Triplett
Marking gage.....A. H. Widen
Match receptacle.....J. E. Neahr
Measuring device.....E. F. Sorensen
Measuring device, Alternating current.....B. Gati
Mechanical movement and electric light socket.....T. A. C. Both
Mesh heater.....A. A. Low
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Metallurgical furnace.....U. Wedge
Mezzanine chair.....J. L. Knight
Mileage registering and auditing apparatus, Automatic.....J. T. Gallaher
Miner's combination tamping tool, &c.....L. and A. W. Shaffer
Mining tub, Self dumping.....O. Belford
Mirror and the like frame.....J. W. Bailey
Music leaf turner.....S. D. Case
Music leaf turner.....G. E. Jones
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Nickel salts and recovering the acid used, Making.....H. L. Wells
Nose guard.....F. L. Adt
Nut lock.....E. A. Doty
Nut lock.....L. D. Kriner
Nut lock.....J. J. Farrell
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Parachute.....L. J. Ronchleau
Paring machine, Apple.....W. A. C. Oaks
Paste to labels, &c., Machine for applying..A. Potdevin
Peeling machine, Potato....G. S. Blakeslee
Pencil and pen clip.....F. J. Klein
Pencil sharpener.....J. D. Stassart
Pencil sharpening machine..E. P. Webster
Phenols with formic aldehyde, Producing condensation products from...A. Weindel
Phenols with formic aldehyde, Producing condensation products from...A. Weindel
Phonograph, Automatic (3 pats).....H. T. Scott et al.
Phonograph mandrel.....H. T. Scott
Phonograph reproducer..H. T. Scott et al.
Phonograph reproducer.....H. T. Scott
Phonography.....I. Kitsee
Phosphate and the like, Drying monocalcic.....T. L. Willson et al.
Photograph printing machine.....A. S. Witter et al.
Photographic backgrounds, Producing.....H. B. Schaeffer
Physician's table.....F. A. Dengner
Pickling compound.....F. J. Wilson
Pin and flower holder.....J. J. Degenhardt
Pinacones, Producing (2 pats).....F. Hoffman et al.
Pipe and tobacco case, Combination.....O. A. V. Buckow
Pipe, Attaching a collar to the end of a..P. H. Grimm
Pipe coupling.....H. H. Hale
Pipe coupling, Train.....W. A. Greenlaw
Pipe cutter.....A. F. Howe
Pipe flanging machine.....R. M. Hunter
Pipe shield, Steam.....M. Sanders
Pipes, Perforation cleaner for oil well.....J. W. Batt
Pistol of the kind having sliding barrels, Self loading.....R. Frommer
Planter, Seed.....H. W. Robbins
Plastering machine.....W. J. Ray
Plow.....R. L. Kilpatrick
Plow attachment.....W. J. Steele
Plow, Reversible.....W. J. Rodgers
Pneumatic cushioned wheel..I. H. Babcock
Powder box.....H. C. Welton
Power transmission device.....V. G. Apple
Power transmission mechanism.....M. C. Krarup
Preserving food.....F. L. Randel
Primary cell.....C. and R. Jaeger
Printing press, Cylinder (Reissue).....J. H. Barr
Printing press ink distributing roller.....W. Dietrich
Printing press, Multicolor.....R. Michle
Projectile, Artillery.....K. Voller
Projectile, Lubricating....A. W. Melander
Pulverizer mill.....J. W. Fuller, Jr.
Pump.....J. M. McWilliams
Pump, Double acting compact power.....S. S. Smith
Pump, Pneumatic.....M. S. Swanstrom
Pump, Rotary.....J. J. Tokheim
Punch.....S. W. Hunn
Punch, Multiple (Reissue).....L. H. Vold
Puzzle.....A. N. Ackley
Radiator, Heat....H. V. and J. B. Gorrell
Radiator, Portable steam or hot water.....A. R. Little
Rail joint.....W. H. Nunamacher
Railway, Loop-the-loop pleasure.....W. H. Bickford
Railway rails, Means for securing..L. Guba
Railway signaling.....J. S. Holliday
Railway tie.....E. C. Jenkins
Railway tie and rail fastening.....J. A. Hyle et al.
Railway track construction.....W. Brinton et al.
Receptacle.....C. D. Lukens
Recorder or indicator.....F. Reed et al.
Reflector.....A. E. Pike
Resilient wheel.....G. Dorffel
Road composition, and making the same.....T. J. Barrett
Road machine.....F. E. Arndt
Rock drill, Down-hole handle supported.....J. G. Leyner
Rocker, Collapsible shoo fly..A. D. Converse
Rocking horse.....A. D. Converse
Rolling tubing.....R. E. Brock
Roof worker's climbing device...S. B. Gray
Rotary engine.....G. W. Brown
Rug finishing machine.....F. Scheil
Rule, Liquid.....T. A. Sammons
Saddle and back-band, Combined.....W. J. Sessions
Sand blast machine.....J. J. Strasser
Sanitary fixture.....R. E. Crane
Sash lock, Window.....W. Cunningham
Saw carriage.....A. J. Meier
Scale, Automatic computing and weighing..J. H. Ohmsman
Scarf pin guard.....R. W. Hardie
Screw driver.....H. G. Ingram
Screw thread cutting device....J. R. Saylor
Screw threads on wire by rolling, Machine and apparatus for forming...M. T. Denne
Scrubbing machine.....J. M. Doherty
Seal, Jar.....C. R. Keeran
Sealing machine, Can.....A. Malmquist
Seat and stiffener, Combined.....L. A. Bullinger et al.
Secondary battery.....A. H. Darker
Seeding machine.....F. R. Packham
Shade roller spear, Spring, (2 pats.).....E. F. Hartshorn
Shaft support and thill coupling, Combined.....I. B. Duncan
Shafting machinery.....W. J. Muncaster
Sharpening machine gripping device, Drill bit.....J. G. Leyner
Sheet handling mechanism...G. Schlesinger
Sheet metal beading machine..H. Metz et al
Shocking machine.....C. Orgaard
Shoe.....R. E. McKibben
Shutter, Ventilating.....W. E. Wine
Shuttle, Hand threading.....J. Lacroix
Sieve adjuster for sieve shoes..E. Bonsness
Sign apparatus, Electric illuminated.....A. O. Seigel
Signaling device, Electric.....F. W. Cole
Siphon head.....C. De Lukacsevics
Skirt and blouse grip, Combined..G. Mathew
Skirt elevator.....A. E. Williams
Sled.....J. C. Van Aken
Sled, Folding.....D. G. Hammond
Slicer, Vegetable.....L. Pysher
Slicing machines, Double knife box for beet root.....M. Paschen
Sliding block.....J. W. Roberts
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Spinning frames, Prevention of double threads and intertwining in....I. Linon
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Spring wheel.....U. G. Wiedman
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Stamp mills, Supporting and lifting and adjusting device for.....E. H. Moyle
Stationary drying frame, Printer's collapsible.....J. C. Burton
Steam separator.....E. K. Standish
Stirrer or conveyer.....D. J. Nevil
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Stovepipe and collar holder....F. S. Divau
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Strainer, Tea and coffee pot..W. H. Holder
Straining hook.....A. G. Soistmann
Street or station indicator..R. E. Hornbeck
Sulfur dioxid, Producing.....E. Rossiter
Surface covering.....E. T. Bates
Surface indicator.....L. L. Leigh
Suspenders.....M. Bono
Swingletree, Spring.....A. Nelson
Syringe case and supporter, Combination..J. W. Allau
Table leg, Foldable.....F. L. Whitney
Tamping machine.....H. Hancock
Tapping water mains, Appliance for.....F. P. Sharp
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Tire for vehicles, Resilient.....H. A. Carmichael
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Tobacco drying and nicotin extracting process.....R. G. Mewborne
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Trolley.....C. A. Lindberg
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Tumbling machine.....L. H. Rogers
Twine reel.....F. R. Sawyer
Twisting machine.....I. L. Wolkow
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Typewriting machine.....A. W. Smith
Umbrella, Folding.....W. A. Little
Upholstery spring attaching device.....I. A. Davis
Valve.....G. B. Richart
Valve.....F. L. Cross
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Valve gear, Engine.....S. E. Reeler
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Valve operating and reversing mechanism for motors worked by expansible motive fluids, Distributing.....A. Bugnon
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Vending machine, Coin controlled.....R. O. Lentz
Vine clipper, Sweet potato.....J. F. Miller
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Wall boxes, Knock out closure in.....J. M. G. Fullman
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Water distribution, Connection for.....B. F. Shapro
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Window screen, Extensible.....S. J. Dixon
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Wrapping machine.....G. I. Hohl
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Issued October 8, 1912.

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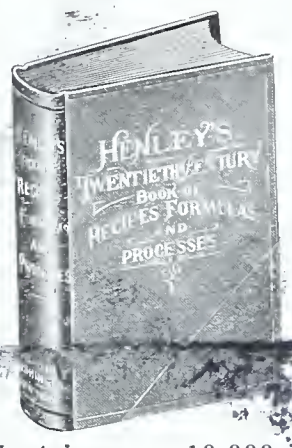
Account register.....A. F. Staples
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Acid and alkali silico alnminates, Producing hydrochlorie.....A. H. Cowles
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Airship.....H. G. Baker
Alloy and producing the same....I. Ladoff
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Automatic brake.....O. Davis
Automobile.....A. S. Krotz
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Automobiles, Safety cranking device for...A. A. Engstrom
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Bath tub attachment.....M. Jefferson
Bed, Collapsible.....N. Y. Townsend
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Bed, Screen.....F. B. Easton
Bed spring.....H. A. Ruggles
Bedstead.....J. Kohler
Bell, Alarm.....H. P. Christianson
Binder and leaf therefor, Loose leaf.....W. H. Cooley
Binder, Loose leaf.....H. C. Miller
Binder, Paper.....J. A. Byron
Boat, Life.....C. and A. A. Jenkins
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Boiler safety attachment.....W. P. Smith
Book, Manifolding sales.....E. K. Bottle
Bottle capper.....G. Strandt
Bottle, Double neck.....N. Nilson
Bottle holder, Nursing.....F. H. Escherich
Bottle, Non-refillable.....C. W. Malone
Bottle, Non-refillable.....H. C. Becker
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Bottle, Non-reusable.....W. S. Brooks
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Box lifter.....G. Weaver
Boxing, Protector for use in..G. O. Brewster
Brake lever lock.....P. F. Augenbraun
Bread, Making.....E. Farwell
Brush.....G. D. Pushee
Brush, Fountain blacking..J. F. Schoolfield
Brush, Graphite.....W. H. Hardman
Brush, Rotary.....W. Stork
Brush, Tooth.....F. C. Kuinders
Buckle or lock, Shoe lace....C. W. Fischer
Buggy top.....W. I. Zirkle
Burglar alarm.....T. J. Halstead
Burners, Electric preheater for pilot.....A. Doble
Burners, Pressure controlled means for hydrocarbon.....C. O. Barion
Bushing, Shaft.....A. Rankeillor
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Buttonhole, Stitched (2 pats.)..E. B. Allen
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Can end flanging mechanism....A. Johnson
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Car dumping mechanism.....K. H. Hansen
Car fluid pressure brake, Railway.....E. A. Barber
Carbureter.....G. P. Rettig
Carbureter.....H. Dock
Carbureter.....W. C. Carter
Card holder.....G. S. Petri
Carousel.....A. F. Muller
Carpet fastener, Stair.....J. D. Gallagher
Carton.....W. H. Doble
Casting apparatus.....W. T. Harding
Casting molten metal in molds..C. Crawford
Cement monoliths or blocks, Apparatus for constructing hollow.....E. Bianchi
Centering device.....H. Mann
Centrifugal machine.....W. Michelsen
Chair frame.....A. H. Greenlund
Chalk holder.....G. F. Miller
Channel furnace.....A. H. Cowles
Check, Rebound.....W. A. Finley
Checkrein support.....O. H. Seiltz
Chimney cleaner.....M. Mivamoto
Christmas tree holder.....H. Trilling
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Cigarette machine, Continuous..N. Du Brul
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Circuit breakers, Coupling for non-closable.....K. Hohn
Circuit closer.....C. A. Castle

Clavier, Practice....A. C. Bergman
Clay sieving machine....A. H. Cowles
Cleaning and sterilizing machine....L. Weiscopf
Clevis....S. T. Hobbs
Clock and indicating device, Combined....J. W. Jones
Clock, Tellurian....W. H. Hall
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Clothes pin....J. A. Hostettler
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Coal boring bit....G. A. Moss
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Coat hanger, Collapsible....J. W. Hamilton
Cock hole cover....P. and H. Mueller
Cock, Stop....M. S. Hollis
Coiler tube....C. Mills
Coin collector....A. F. Dixon
Collapsible drill....C. H. Oslund
Collar, Adjustable horse....E. Walrath
Collar supporter....J. H. and I. Taylor
Comb cleaning device....J. Bercha
Computing device....H. A. Thomas
Concrete supplying apparatus..C. W. Eaton
Condensates from casein phenols and formic aldehyde and the product obtained thereby, Preparing....L. Berend
Confetti making apparatus....G. G. Griffin
Controlling mechanism....A. Winton
Conveyer, Link belt....N. B. Widmayer
Cooking apparatus....H. J. Fell
Cooling tower....E. Burhorn
Coop....C. R. Baker
Copying apparatus....G. H. Coquenguiot
Cork extractor....I. H. Jones et al.
Corn husker....H. Besser
Corn husking machine....J. E. Goodhue
Cornet....Z. A. Meredith
Counting of notes, dealing of cards, &c., Device for facilitating the...G. H. Rives
Coupling....H. Taylor et al.
Covering, Weatherproof....L. T. Lindley
Crate....H. M. Roseboom
Crate, Folding....R. L. Pickering
Crate, Knockdown shipping..C. H. Matthews
Cue tip holder....W. H. La Fevre
Cultivator....W. A. Calvin
Cultivator and fertilizer distributer, Combined....T. J. Grimes
Culvert, Metal....W. T. Shannon
Cut off device....A. Kadow
Cutting machine for cloth, leather, &c....F. W. Stork
Davit, Boat....C. E. Waterworth
Dental engine (2 pats.)....O. H. and A. F. Pieper
Dental floss package....A. Bauer
Dental plunger....W. A. Salt
Desiccating....W. H. Allen
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Door closer....J. D. Humphrey
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Door controlling means....H. G. Voight
Door fastener, Burglar proof..F. Buskirk
Door gnide, Automatic....J. D. Wiese
Door hanger track....J. H. Lawrence
Door holder....F. J. Lee
Door lock, Sliding....H. G. Voight
Door opening and closing device....H. C. Bundy
Door operating mechanism....T. H. Tutwiler et al.
Door operating mechanism..G. M. Cameron
Door stop and holder....J. H. Coffman
Dough retainer or trough....I. B. Golden
Draft equalizer....H. G. Kleihauer
Draft evener....F. A. Bressmer et al.
Drawer support, Furniture..J. F. Dunleavy
Drills, &c., Driving mechanism for portable....J. A. Beadley
Drinking vessel, Collapsible..E. R. Douglas
Drum attachment....F. J. Strahl
Drying process and apparatus....G. W. McMullen
Dust guard....G. F. Goodley
Dyeing machine....W. S. Duell
Egg tester....D. B. Conway
Egg testing machine....S. J. Fish
Electric circuit breaker....F. L. Sessions
Electric conduit fitting (Reissue)....W. C. Robinson
Electric controller....A. C. Eastwood
Electric controller....J. A. Latimer
Electric furnace....O. Vogel
Electric light display system...H. E. Way
Electric regulator, Automatic..H. Leitner
Electric safety device for the flowing out of excess voltage....G. Giles
Electric switch contact....L. L. Tatum
Electric translating device support....B. A. Stowe
Electrical distribution system..W. L. Bliss
Electrically heated utensil...R. A. Warner
Electrode, Sectional....A. M. Williamson
Electroplating appliance....J. A. Fraser
Electrotyping molds, Composition of matter for removing grease from..G. E. Dunton
Elevator control....J. D. Ihlder
Elevator safeties, Electric motor mechanism for operating....A. Magnuson
Elevator safety brake....E. J. Mounts
Embroidering machine protective device....J. A. Groebli
Embroidery machine, Jacquard....R. Zahn
End gate fastening, Wagon..J. W. Schroeder
Engine....F. W. Lake
Engine cooling means, Gasolene....T. J. Loftus
Engine cranking device, Explosive....C. E. Best
Engine safety starting crank, Explosive....J. T. Weinzierl et al.
Engines, Ignition apparatus for internal-combustion....M. B. Crist et al.
Evaporating pan for drying off alcohol from malt liquors....H. E. Deckebach
Excavating and levee building machine, Combined....C. H. Dishman
Exercising machine, Registering physical..A. E. Hartig
Excavator....J. Gallagher
Exhauster or compressor for gases, also applicable as an ejector-condenser..W. Hunt
Expansion joint for integrally cast structures....C. F. Coda
Explosive, Chlorate....O. Silberrad
Explosive, Perchlorate....O. Silberrad
Extension bracket....A. F. Pieper
Eyeglass mounting....G. A. Bader
Eyeglass nose clip....H. M. Sacks
Fan casting, Electric....A. Gregory
Fastener....W. J. Keary
Faucet....A. J. Collar
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Feed bag....J. Dulkowski
Fender....J. F. Hunter
Fertilizer, distributing attachment....W. A. Dalton
Fibrous composition and making the same....G. A. Henderson
Filament support....J. W. Howell
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Fluid pressure, Apparatus for producing...J. F. Keyes
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Furnaces from injurious gases, Protecting tunnel....A. H. Cowles
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Fuse formed with terminals or contacts of knife blade type, Detachably mounting a....B. D. Horton
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Gage and the like case....F. Schubert
Game apparatus....I. A. Deline
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Gearing....R. S. Brown
Gearing....T. R. Smith
Gearing, Apparatus for making toothed....F. Humphris
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Gearing, Toothed....F. Humphris
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Gem setting....D. Shinian
Glassware fishing machine....J. H. Deakin et al.
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Grain, Treatment of....J. G. F. Dombach
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Grease and lubricant cups, Caps for....G. E. Bowen
Grease gun....H. H. Colson
Grinding and polishing rolls, Apparatus for....M. H. Richards
Grinding gage....J. A. Johnson
Grinding machine....W. Van Nostrand
Gum, Manufacture of chewing....J. D. Darling
Gum receptacle, Chewing....W. D. Roop
Gun, Breakdown....W. C. Davenport
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Hand comb....R. Kraus
Handle....E. L. Watrous
Handle....G. P. Hart et al.
Handsaw....J. Wood
Harrow....E. B. Dikeman
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Hat box, Folding....A. T. Fitzgerald
Hat pin point guard....J. A. Fleming
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